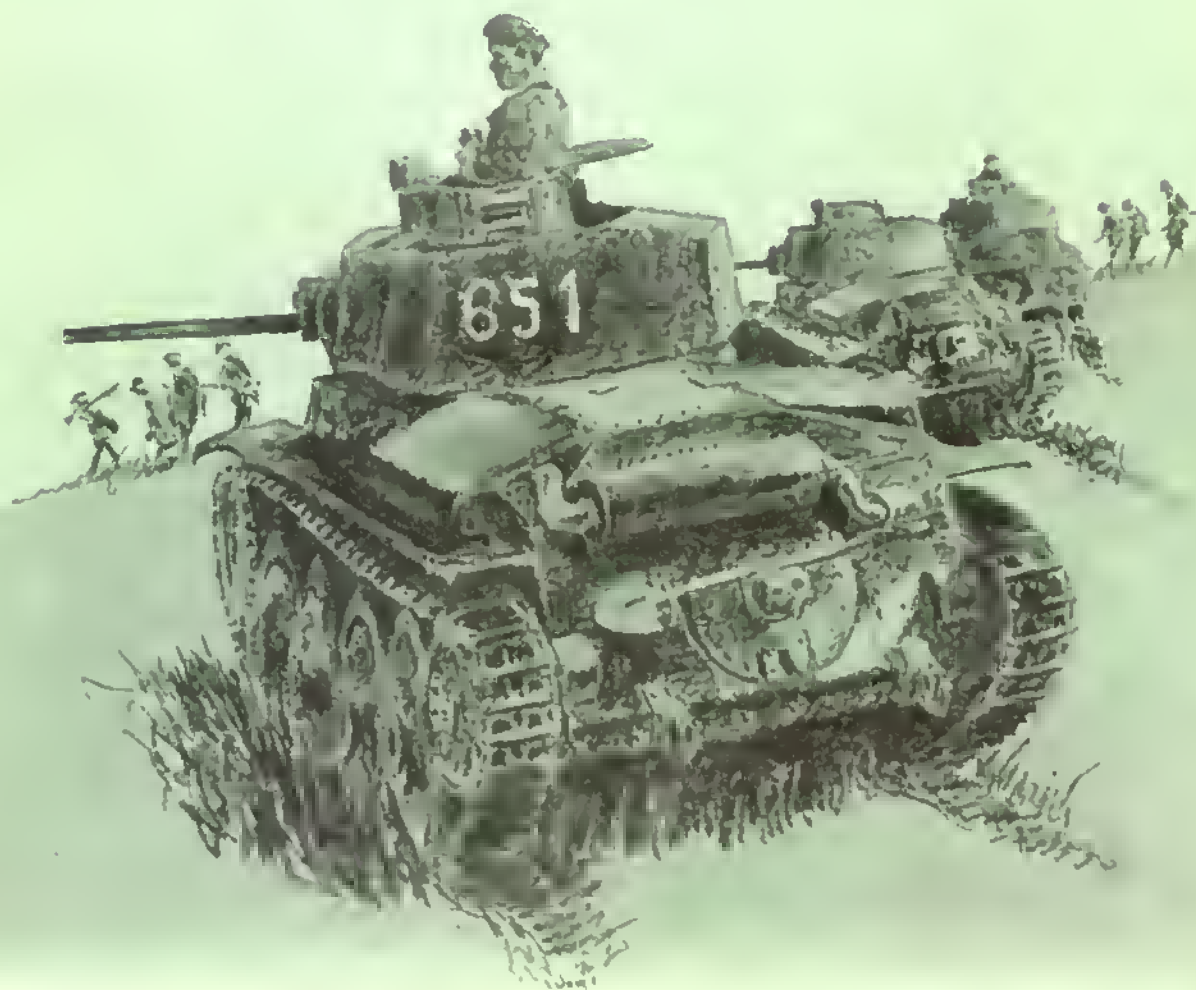




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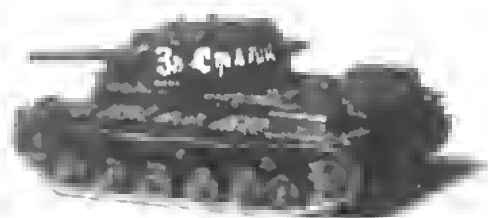
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A MAGAZINE FOR ARMOR ENTHUSIASTS
Volume 3 Number 3



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PAGE	ARTICLE TITLE	AUTHOR
4	The History and Development of Czechoslovak Armored Fighting Vehicles	Jiri T. Vojta
7	Czechoslovak LT Vz.38 Light Tank, 4-view 1:32nd Scale Drawings	S. R. Cobb
9	Salerno, D Plus..... The U. S. VI. Corps	John G. Yonos
12	Color 'n Camouflage: "Panzerkampfwagen Valentine"	William E. Platz
14	Converting the Nitto Sd.Kfz. 251/1 Hanomag Model Kit	Jim Steuard
17	Armor G-2; Armor of the Arab Nations, Part 3	J. C. Johns
18	Details for the Modeler: The M-24 "Chaffee" Light Tank	
20	Seek, Strike and Destroy, Part IV. HVAP Ammunition	Lonnie Gill
23	The Baron's Bookshelf: Book Reviews for the Armor Reader	Jim Garrison
24	The "kleines Kettenkrad", a Tracked Motorcycle	Jim Steuard
25	Sd.Kfz. 2 Kettenkrad, 4-view 1:32nd Scale Drawings	Jim Steuard
26	Wargame Review: Sand Table Fortifications, Part I.	Gary Gygas
27	The Baron's Corner: Working Doors for the Tamiya 1:35th Scale Kübelwagen	Norb Meyer
28	German Wehrmacht and Waffen-SS Heavy Tank Units, Part I.	Jim Steuard
29	Organization Chart, "Königstiger" schwere-Panzer-Kompanie, 1944	Jim Steuard
30	Battle Problem for Wargamers, Part I.	Dale Bley & Bill Platz
31	Photo Epilog: The V-100 "Commando" Armored Car	
32	Battle Problem for Wargamers, Part II.	Dale Bley & Bill Platz
33	The Charge of the Light Brigade	Lonnie Gill
34	Product Review: Sd.Kfz.250/10 Scratch-Building Guide	Jim Steuard
34	Product Review: Armtec Accessories	Lonnie Gill

COVER: While German infantry advance through high grass, a platoon of Panzer 38(t) light tanks cover their maneuvers, with the crews on watch for trouble. The Pz. 38(t) was the former Czech Army LT Vz.38; see Page 4 for more details. Our charcoal rendering is by Bruce Weigle.

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The AFV-G2 is a magazine, published monthly, for Armor Enthusiasts, with the purpose of gathering and disseminating information about Armored Fighting Vehicles and their employment; to provide an opportunity for persons seriously interested in the History of Armored Fighting Vehicles, in the modeling of these AFV's and associated equipment, and in the playing of military Wargames utilizing miniature AFV's, to share ideas and items of mutual interest, and to promote an interest and awareness in the subject of AFV's.

The AFV-G2 is available, with an individual issue price of \$.60, from local Hobby Shops, Magazine and Book Dealers, or from the Publisher. Subscriptions in the United States, Canada and Mexico are \$6.00 yearly. All other foreign subscriptions (that involve "overseas" mail) are \$7.00 (yearly), with foreign sample copies priced at \$.70. Checks should be made payable to the "AFV-G2" or to Baron Publishing Company, and forwarded to the Circulation Director: Mr. John Yonos, Post Office Box 293, La Puente, California 91747. In the United Kingdom contact: Greening, Knoll Cottage, Knoll Road, Dorking, Surrey.

AFV-G2 is printed in the United States, mailed in Los Angeles, California and sent as "third class" mail to those subscribers living in the United States. To those subscribers living outside of the territorial boundaries of the United States, AFV-G2 is sent as "printed matter".

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The History and Development of Czechoslovak Armored Fighting Vehicles

Part II.

by Jiri T. Vojta



The Škoda works ignored the tank manufacturing field for a long time, for the simple reason that it had more orders than it could fill. Its plant did not experience the depression at all; in fact it was hiring additional machinists throughout the depression years. Škoda was too big to depend entirely on Czechoslovak military contracts, and over the years had succeeded in building up a satisfied international clientele. Its main products were, of course, heavy and medium cannons and steam locomotives. To engage in a new field of manufacturing, the factory would have been forced to go through a per-

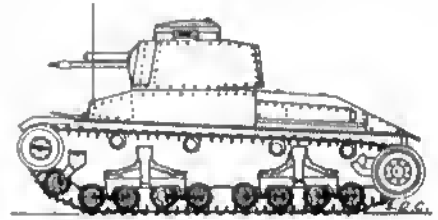
iod of extensive experimentation. Alas, Škoda was in no hurry to do so. Still, as the leading armament supplier to the world, Škoda was somewhat forced to recognize the fact that its numerous customers wanted to purchase Škoda tanks, which were expected to be as good as the famous Škoda cannons. It is believed that Škoda was not interested in Czechoslovak contracts, since they would have been too small anyway. (Apparently both China and Japan were offering to purchase large quantities of tanks, if Škoda would start making them.) On the other hand, it was a good policy to have the Czechoslovak Army test the new weapons that Škoda developed; this gave the product a sort of a seal of approval that was needed for foreign exports.

In July of 1936, the Škoda works offered five new tanks to the Czech army for trials. These prototypes, designated Š-II, (the Š stood for Škoda), were to be a revolutionary type of fighting vehicle; a highly developed product, years ahead of its time. The Š-II tank was equipped with a very complicated compressed air system for turret traverse, for gear reduction, for clutch engagement and for braking. In principle, this was an excellent concept, for the older LT Vz. 34 was rather hard to drive. In the Š-II, Škoda offered a new tank that could be driven with effortless ease. The turret would swing easily; the driver would not become overtired, resulting in increased fighting efficiency. The Š-II tank would surely be as good a product as the artillery produced by Škoda.

The Czechoslovak Army trials proved to be catastrophic for the Škoda vehicle, which was redesignated as the LT Vz. 35. The tank was so complicated that it simply could not be maintained. Its top speed, claimed to be 34 km per hour in cross country driving, turned out to be only 17 km per hour, a sharp regression when contrasted with the speed of the LT Vz. 34. After 90 km of sustained driving, each tank (of the five) developed some critical faults that could not be corrected in the field. One tank had split the hydraulic brake cylinder, another burned out the clutch; all five tanks experienced severe overheating of the batteries, and all tanks burned out the brake linings. The Škoda works asked the army not to publish the results of the trial, on the grounds that it would severely damage its world-wide reputation. The tanks were taken back to the Škoda plant in Plzen for repairs. Additional trials were requested for the near future.

In 1936, the international situation began to drift towards war, and Czechoslovakia felt threatened by the rising German military power. Increased funds for armaments were voted, and a greater interest began to be paid to the development of tanks. The country was coming out of the depression and the Ministry of National Defense was interested in securing large scale production

of tanks. To achieve this aim, it became necessary to make Škoda and ČKD cooperate, rather than compete. Under ministerial guidance, the two factories made certain agreements whereby the manufacture of tanks would be jointly undertaken. In the case of the ill-conceived LT Vz. 35, the agreement clearly favored Škoda, and ČKD, being aware of the weaknesses in the design, took up production only as a patriotic duty. Unfortunately, the agreement did not increase tank production. On the contrary, it created additional problems. The Škoda works tried to improve the tank with some 675 modifications, while ČKD had several hundred modifications of its own, and the two factories did not always notify each other in time to save further delays and interruptions in the production lines. At the same time, the Czechoslovak Army urged for the speediest possible fulfillment of contracts, under which Škoda was to produce 160 units and ČKD 103. Most of all, the army wanted the tanks to have interchangeable parts, regardless of the place of manufacture, a goal that was never achieved. In 1937, an additional trial of the LT Vz. 35 was held and the modified vehicle covered 4600 km of driving without showing any appreciable wear. The apprehensions about the tank gradually lessened and, after further modifications, the LT Vz. 35 began to serve reasonably well. To maintain the tank in the field, however, remained as great a problem as ever. The final version of the LT Vz. 35 was powered by a Škoda engine of 120 HP, giving the vehicle a top speed of 34 km per hour. Its armor was between 8mm and 25mm thick, and it was armed with the Škoda 37mm anti-tank cannon and two Vz. 37 machine guns in 7.92mm caliber. The total weight of the tank was 10.5 tons.



Czech LTVZ. 35 Tank

These light tanks were to form a new regiment of attack vehicles which had been authorized by the Ministry, as early as September 1933. The armored regiment was to have a strength of 42 officers, 36 senior NCO's and 746 men. It was to cooperate with six squadrons of armored cars, two of which were training units. The regiment was incorporated into a Fast Division whose main force was cavalry.

The Development of the LT Vz. 38 Tank

In March of 1937, the Ministry of National Defense asked all factories in Czechoslovakia to submit designs and prototypes of tanks that could be placed into mass production with possible orders in the vicinity of 400 tanks. The Ministry offered to purchase 260 tanks immediately, with additional contracts to follow. ČKD suggested that its tanks were superior (and they were) to those designed by Škoda, and that it had been working independently on new designs for foreign countries. The tank that ČKD had in mind was already being manufactured in several versions for Lithuania, Rumania, Iran, Peru, Sweden and Switzerland. The factory designation of the prototype was TNH, and it was offered in several modifications including a tropical variant. Armament was provided according to the customer's specifications, ranging from the 37mm cannon to types armed only with machine guns (as the Iranian contract requested). Since Škoda withdrew from the competition and the Tatra automobile factory did not have a sufficiently large facility, it seemed certain that ČKD would receive all the future orders. ČKD happened to have a truly magnificent fighting vehicle in the TNH, as the army was soon to discover. The trials began on January 25, 1938, and continued without interruptions to April 28 of that year. The test vehicle drove 5,584 km with no breakdowns at all; this distance included 1,954 km of cross-country



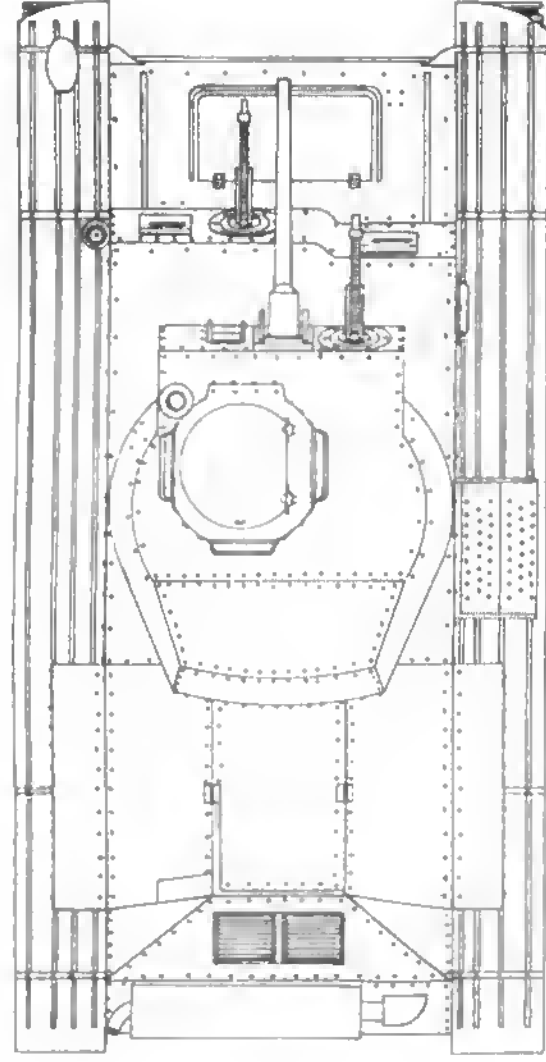
driving. Returning from the trials, the beaming drivers shouted: "We have the 38." The vehicle was accepted by the enthusiastic officers right on the spot at the training grounds at Milovice. On the 1st of June 1938, the Ministry placed the first order with ČKD, with options for several hundred additional units. The only drawback of this tank was its price, which was quoted as 640,000 Czechoslovak crowns without the guns, optics and radio. The price of the LT Vz. 38 came close to one million crowns when fully equipped with spare parts and ammunition. The rapidly deteriorating international situation forced the Czechoslovak government to pay this price. ČKD had, however, another problem: its capacity was overloaded with foreign contracts that had to be met first; the defense of Czechoslovakia had to wait. Despite the overload, ČKD promised to deliver 20 LT Vz. 38 tanks to the army each month; ČKD also promised to begin branch factory production at Blansko, with an annual capacity of 300 tanks. The LT Vz. 38, as ordered by the Czechoslovak Army, had the following specifications: Weight 8.8 tons, Speed 42 km per hour, Armor 8mm to 25mm thick. The armaments included the 37mm Škoda cannon and two heavy Vz. 37 machine guns of 7.92mm caliber. The tank was powered by a Praga engine, type TN 100, giving 125 horsepower. Each tank was provided with a radio and excellent optical sights.



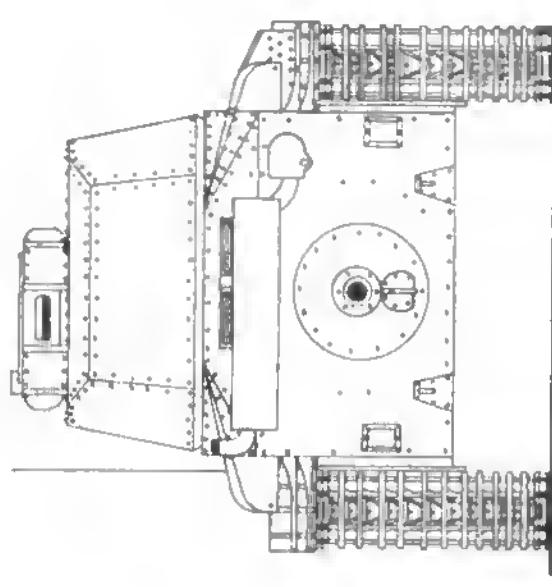
While testing the LT Vz. 38, the army expressed an interest in a heavier medium tank that ČKD was offering for export as the prototype V-8-H. In March of 1938, this medium tank was tested and it performed well, though it developed 143 breakdowns during trials. ČKD promised to rectify the faults found in the tank and the army ordered 300 of these vehicles. The order for the medium tanks, fully equipped with spare parts and ammunition came to 453,900,000 Czechoslovak crowns. The specifications for the V-8-H medium tank were as follows: Weight 14.7 tons, Speed 48 km per hour, engine giving 240 HP; the Armor being of thickness between 10mm and 32mm. Its armament consisted of the newly developed 47mm Škoda anti-tank gun, and two Vz. 37 heavy machine guns of 7.92mm caliber.

In September, 1938, the Munich crisis came, and Czechoslovakia carried out her mobilization. Some 920,000 men answered the call to the colors, and the frontier fortifications were fully manned after only 48 hours, surely a record unsurpassed by any nation. The "attack vehicle" units of the Fast Divisions were withdrawn to the strategic reserve areas, according to war plans. The bulk of the armor was kept in southern Moravia at a distance of only 70 km from Vienna. The Fast Divisions under the command of General Prchala had a very ambitious plan: immediately after the outbreak of hostilities, the Czechoslovak Fast Divisions (there were 4 such divisions) were to dash towards Vienna. Tanks were to spearhead the attack; the armored cars were to follow the roads and the cavalry was to sweep the countryside in a broad arc. It was expected that the Czechoslovak attack forces would reach Vienna on the third day of war. It was presumed that the German High Command would never allow such a situation to develop and they would withdraw the bulk of their forces from attack positions around Czechoslovakia towards Vienna. Such a move, it was hoped, would have ruined German plans to a degree that would have made a concentrated attack against Czechoslovakia impossible. Possibly a stalemate would have resulted.

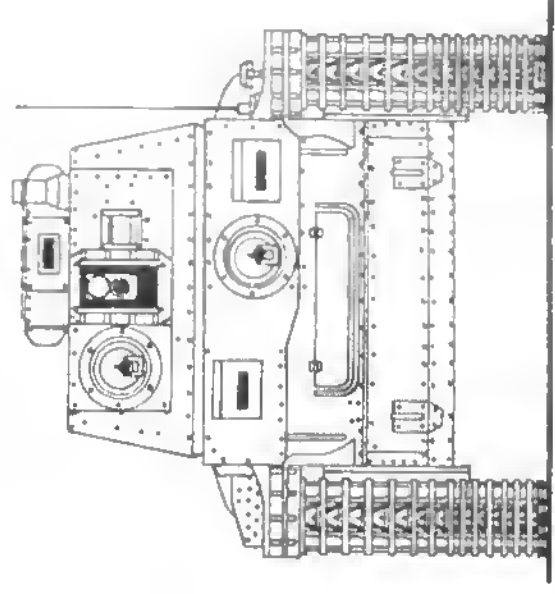
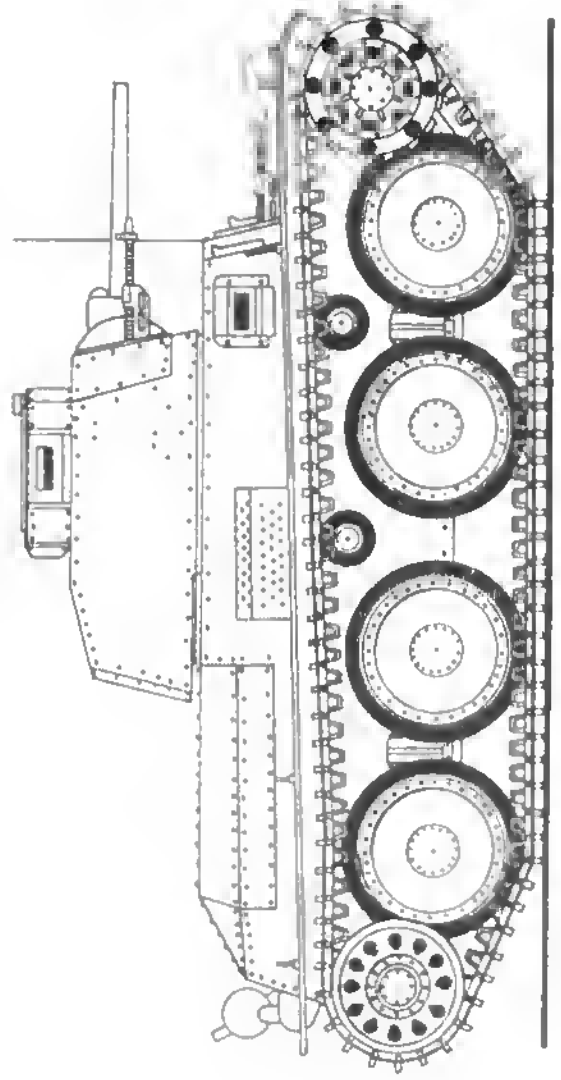
The events connected with the Munich crisis are so well known that they need no further elaboration. The Czechoslovak armed forces were not given the order to fight and, in shame, they withdrew from the border areas which were handed over to the Germans. In retrospect, analyzing the situation, one reaches the conclusion that the Czechoslovak situation was by no means a desper-



Czechoslovak LT Vz.38
Light Tank



Drawn by: S. R. Cobb
Scale: 1:32



ate one, it afforded a good possibility of victory in defense. In September of 1938, the Czechoslovak armed forces had at its disposal 70 "baby" tanks, 50 LT Vz. 34 tanks, and 298 LT Vz. 35 tanks, in addition to 51 armored cars; a considerable force when one considers the state of German armor in that year. On the other hand, the whole concept of Fast Divisions was wrong in the light of the information we now have. The Fast Divisions were too large and unwieldy. A typical division of this type consisted of two cavalry regiments, two motorized infantry regiments, two companies of light tanks, a bicycle battalion, an anti-tank artillery battalion (37mm guns only), an anti-aircraft motorized company, one company of combat engineers and one light motorized artillery battery; a total of 10,500 men and 460 officers. The weakness of such a division was obvious and had it been put to the test of battle, this heterogeneous unit would have fallen apart. Most probably, the cavalry would not have been able to keep up with the light tanks, and the accompanying infantry traveling in trucks would have been halted by the first blown-up bridge. Furthermore, given the air superiority of the German air force, the road bound units would have been, no doubt, destroyed from the air, while the advancing tanks would have been forced to halt for lack of support and shortage of fuel. It should be noted, however, that the Czechoslovak cavalry was not designed to meet the enemy mounted,



rather, it was trained to dismount just before battle and fight on foot. The horse thus constituted only a means of transportation with excellent cross-country capabilities. In this respect, the Czechoslovak cavalry was a better idea than the motorized infantry, which in following roads, would have been a sure target for enemy aircraft. The cavalry, by contrast, planned to move through forests. Unlike the foot soldiers the cavalry units carried with them, mounted on horses, light 37mm anti-tank cannons and heavy machine guns, as well as large supplies of ammunition. Interesting as this speculation may be, the true test of battle

was not made, and so, we shall never know for certain.

After the Munich surrender, the Czechoslovak armed forces continued to arm in anticipation of further German aggression. During the fall of 1938 and the spring of 1939, the LT Vz. 38 finally started to come out of the ČKD factory. How unfortunate that these excellent tanks were not ready a few months earlier at the time of Munich; they would have certainly given extra punch to Czechoslovak military might, and perhaps the President, Dr. E. Benés, would have been less willing to surrender.

What Happened to Czechoslovak Armor

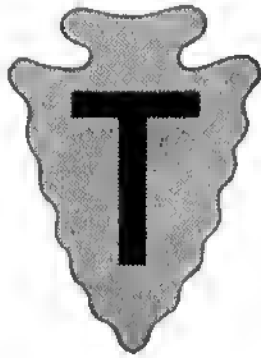
On March 15, 1939, during a snow blizzard, the rest of Bohemia and Moravia were occupied. The eastern part of Czechoslovakia, Slovakia, proclaimed itself independent. When the Germans arrived at Milovice, the Czechoslovak tank training center, they were truly astonished. There, waiting for surrender, stood 469 tanks in perfect condition. A German officer by the name of Böhm, a former Austrian soldier who could speak Czech, was arranging the takeover of the tank park. He displayed deep emotions, when he communicated with the Czech officers present. As a soldier, he felt that surrender without a fight was a burden that no soldier could bear. As he walked along the endless lines of tanks, he stood in front of the medium tank and pointed to the powerful 47mm cannon and said: "We could not have beat you... why did you not fight? Why did you surrender?"

The final disposition of the Czechoslovak tanks is not clear. We do know that some 60 of the LT Vz. 38's and some medium tanks were handed over to the now-independent Slovak Free State. One solitary tank was given over to the tiny Czech army which the Germans authorized to exist at a strength of less than 7000 men. The bulk of the tanks were loaded on trains and transported to an area somewhere near Dresden. Apparently the LT Vz. 34 was used only for training, the LT Vz. 35

(Continued on Page 30)

Salerno - D-Day Plus... the U.S. VI. Corps

by John Yonos



*Shoulder Sleeve Insignia-
U.S. 36th Infantry Division
"a dark brown 'T' on a light
blue arrowhead-"*

On September 10, 1943, the 36th Infantry Division was in possession of a beachhead at Paestum on the Salerno Plain in Italy (see AFV-G2, Vol. 2, No. 11, for the D-Day account). Previously, units of the 36th had been overrun and were fighting tanks with grenades. Therefore, on the night of 9/10 September, the 36th prepared for more of the same to occur at dawn.

Fortunately, the expected attack did not materialize and the 141st Regimental Combat Team (RCT) which had

been severely mauled used the time to complete their reorganization. They then moved south of Paestum to block possible enemy access to the beachhead. The 143rd Regimental Combat Team was placed in positions from Mt. Soprano to Capaccio and Mt. Soltane, and they sent patrols across the Calore River. The 142nd RCT, together with the 132nd Field Artillery Battalion moved out to attack Altavilla and Hill 424, an attack that was not impeded by the small amount of enemy resistance.

Early on the morning of the 10th, elements of the 179th Regimental Combat Team of the 45th Infantry Division (the "Thunderbird" Division) landed at Paestum. Their previous two days had been spent at sea and they were glad to feel solid ground under them again. On the 10th, they were ordered to proceed up the Sele River to capture the bridge at Ponte Sele (the Sele River being the dividing line between the British 10 Corps and the U.S. VI. Corps sectors). The German 16. Panzer-Division had concentrated its meager forces in the British sector, to keep the roads and passes open to Naples for possible reinforcements. Now, there was a ten-mile gap between the two Allied corps. Into this gap, the 179th RCT proceeded. (See map on page 10.)

First and Third Battalions of the 179th RCT moved by a direct route. The Second Battalion with Battery B of the 160th Field Artillery Battalion was sent to Ponte alla Scafa, on the southern bank of the Calore River in order to protect the exposed right flank of the other two battalions. The Second Battalion approached a bridge north of Altavilla, just as the First Battalion of the 142nd RCT attacked Altavilla itself. The bridge had been destroyed by the retreating Germans, but the men of the Second Battalion used hand tools and vehicles to break down the ten-foot high banks so that the infantry, a platoon of tanks and a platoon of tank destroyers could cross. This group no sooner reached the other side when the Germans attacked with tanks and elements of Pionier- (or Engineer) Battalion 29, forcing the Americans back across the Calore River. Throughout the afternoon, the enemy held the river crossing.

Meanwhile, the First and Third Battalions had proceeded up the Sele River past Persano. Company L was detached from the Third Battalion to take the main road to Ponte Sele, but it was forced to retreat by a large enemy force. The rest of the Third Battalion reached the hills overlooking Ponte Sele but could not proceed further. The Germans, recognizing the threat to one of their main roads, Highway 19, attacked the forward elements of the Third Battalion and, from Persano, attacked the rear of the First Battalion. This move cut the Americans off from their supporting armor, the 645th Tank Destroyer Battalion and Company C of the 753rd Tank Battalion, which were held south of the Calore River by heavy enemy artillery fire and troop concentrations.

When first attacked, Company C of the First Battalion was ordered to organize defensive positions in the rear of the battalion. As they started to dig-in, eight Panzer IV.'s and some enemy infantry attacked them. Company C fell back with heavy losses. The German force almost reached the Regimental Command Post before being halted by the rest of the First Battalion which had turned to fight.

Meanwhile, the Third Battalion was being pushed back by another force of Germans. As



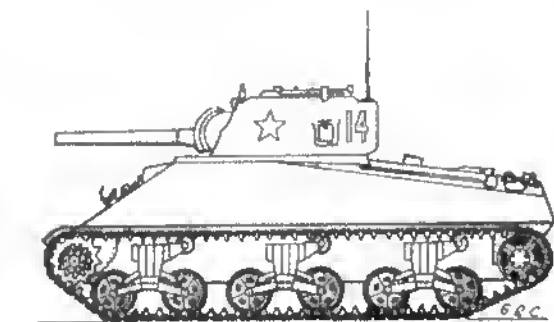
*Shoulder Sleeve Insignia-
U.S. 45th Infantry Division
"a yellow Indian Thunderbird
on a blood-red diamond"*

the Third Battalion approached the First Battalion positions, orders were issued for an all-around defense, for the two units were now completely encircled.

While the First and Third Battalions were being forced on the defense, Company C of the 645th Tank Destroyer Battalion and a platoon of tanks from Company C of the 753rd Tank Battalion attacked Persano. They were met by accurate anti-tank fire and were forced back with the loss of one tank and seven TD's. Later, at another point on the river, tank destroyers and infantry attempted a crossing, which was crushed with the loss of another three of the armored vehicles.

By dusk, Batteries A and C of the 160th Field Artillery Battalion were down to ten rounds per gun with no way to obtain more. Food, water and medical supplies were running low. One truckload of small-arms ammunition had been driven-in personally by Brig. General R.S. MacLain, but that was all. To add to their plight, German planes bombed and strafed the Third Battalion positions.

Nearby the Sele River on a small knoll was a Tobacco Factory, consisting of five buildings arranged about three sides of a square. On September 11th, the 191st Tank Battalion approached this factory, well ahead of their supporting infantry, elements of the 157th RCT of the 45th Division. As they approached the buildings, they discovered German forces which were elements of the 1st



M-4 Sherman Tank of the 753rd Tank Bn.

Battalion, Panzer-Grenadier-Regiment 79. (16. Panzer-Division) with a few hidden Panzer IV's.

Company B of the 191st Tank Battalion, under Capt. Donald H. May, advanced cautiously against the factory, with two platoons on the west and one on the east side of the knoll. Several German personnel carriers were destroyed but the Germans had evidently baited another trap. As the tanks moved in closer, German artillery, tanks and anti-tank guns opened fire. Seven American tanks were knocked out; five completely burned out. Company B limped back to await the infantry. When the infantry arrived, plans were made for another attack on the following day.

On September 12th, elements of 26. Panzer- and 29. Panzer-Grenadier-Divisions arrived in the beachhead area to help the 16. Panzer-Division. A battle group of 26. Panzer-Division remained to the south, fighting stubborn delaying actions against the entire British 8th Army. Throughout the 12th, the Germans used their mobility to probe against the defenses of the U.S. VI. Corps.

The second battle for the Tobacco Factory took place on the 12th, with Companies A and B of the 157th RCT attacking. Cannons of the 191st Tank Battalion shelled a farm house to the north, while a company of tanks sent 180 rounds into the factory complex. After a pitched battle, the Germans withdrew up the Eboli road, and Company B, 157th RCT occupied the factory by 1130 hours.

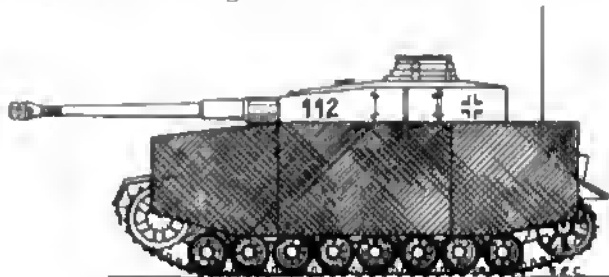
At 1305 hours, eight Panzer IV tanks and a battalion of infantry counterattacked. Howitzers of the 158th Field Artillery Battalion halted this attack only momentarily. By 1340, the Germans again held the factory. This time, the 158th and 189th Field Artillery Battalions and naval gun fire forced the enemy out of the buildings. At 1700, Companies A and C of the 191st Tank Battalion led the new attack on the factory, which was now securely in American hands.

The First Battalion, 142nd RCT, had captured Altavilla on the previous day, spreading its forces across the two hills and the village. During the night of 11/12 September, elements of the 1st Battalion, Panzer-Grenadier-Regiment 15. infiltrated the American lines. At daybreak, the



men on Hill 424 received fire from everywhere. Colonel Gaines J. Barron, the Battalion Commander, ordered Companies A and B to withdraw. As Company A did not appear to receive the order, Colonel Barron went to direct the withdrawal action. He was lost enroute. The Germans broke through to the village and the American battalion was cut in two. The Battalion Executive Officer, Major William B. Mobley, took command and withdrew Company D and the Battalion CP. All through the night of September 12th, small groups of men drifted back through the lines.

On the 13th, an attack on Altavilla was launched by the Third Battalion, 142nd RCT, with the 260 remaining officers and men of the First Battalion taking the town itself. American artillery and naval gunfire pounded the hills on both sides of Altavilla, and the hills beyond. As the two battalions advanced, they were met by concentrated machine gun and artillery fire. A successive attack on Hill 424 was planned for 1715 hours; instead, at 1700 hours, the Germans counterattacked the Third Battalion, which held its ground, but was later forced to withdraw.



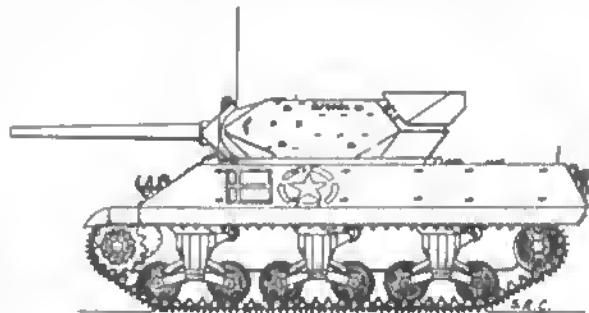
*Pz.Kpfw. IV, Ausf. J of Panzer-Regiment 26.
(26. Pz. Div.)*

The 13th also brought a new German attack down the Selc-Calore corridor between the U.S. VI. Corps and the British 10 Corps. Initially, the attack hit both flanks of the First Battalion, 157th RCT, which was dug-in around the Factory. Six Panzer IV's attacked the left flank, while fifteen more attacked the right flank. They were followed by the I. Abteilung, Panzer-Grenadier-Regiment 79, and towed artillery. American tanks, TD's, anti-tank guns and Cannon Company howitzers were moved-up hastily, and artillery support hammered at the attackers, but the Germans continued to advance. Two Panzer IV's and six scout cars circled the right flank of the U.S. infantry at the factory, and they were within 150 yards of the position before the defenders discovered them. As the infantry fell back, two U.S. tank companies were ordered to assist them, with little luck. By 1830, the Germans had driven the American units back 1-1/2 miles from the factory. As the Germans had reached their objectives, firing gradually died-out.

A force of German tanks and infantry also came down the corridor and smashed into the left flank of the Second Battalion, 143rd RCT, and they fanned-out to hit the main defenses of the battalion. Another German force crossed near Persano to take the U.S. unit in its rear. Most of Company G escaped across the Calore River, but few of the rest ever came back; 508 officers and men were lost.

Fifteen Panzer IV's headed south from Persano into a gap in the VI. Corps lines, which was blocked by the 158th and 189th Field Artillery Battalions. All available men were gathered and gun crews were stripped to a minimum. Mechanics, clerks, even the Divisional Artillery Band were handed rifles and machine guns and told, "now you're infantry". The two artillery battalions fired 3650 artillery rounds before the German attack broke.

The entire American gains for the past two days on their left flank were nullified on the 13th. The VI. Corps spent a nervous night on 13/14 September, reorganizing into defensive positions.



M-10 Tank Destroyer of the 645th TD Bn.

The next morning, enemy forces started probing for the American lines. One force of eight Panzer IV's and about a battalion of infantry passed parallel to the new positions. American artillery, infantry, tanks and tank destroyers opened fire, destroying all eight enemy tanks. The Germans began probing again, this time in strength. Each attack was beaten back, with the assistance of naval gunfire. Destroyers and Cruisers came in so close to the beaches that some touched bottom momentarily. The situation in both the British and American sectors was grim. So much so that General Mark Clark ordered Admiral Hewitt to draw up plans for moving VI. Corps to the north and landing it in support of 10 Corps, or vice-versa. In effect, this would consolidate the two beachheads into one. Other plans were also explored, for it was fully expected that the German forces would renew their assault in the morning. Some pessimistic officers were talking about total withdrawal from the beachhead, and the Allied situation certainly looked dark.

To be concluded next issue

Color 'n Camouflage

Panzerkampfwagen "Valentine" in Tunisia
November 1942 - January 1943

by Bill Platz

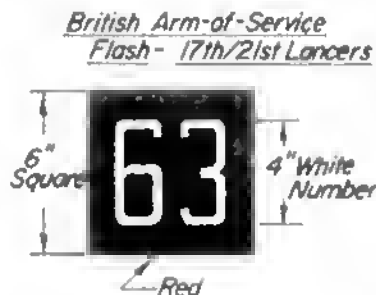
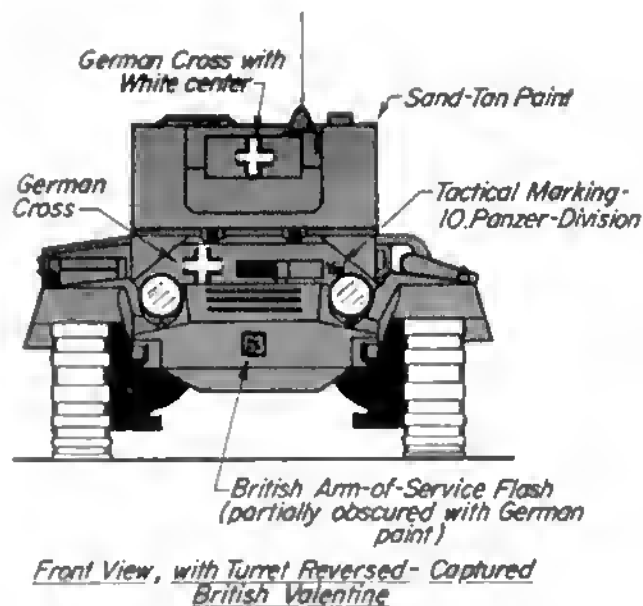
In April of 1942, a shipment of new tanks was issued to the British 17th/21st Lancers. These were Valentine Mark V.'s with new diesel engines and the same old 2-pounder guns. The Regiment had only a few months to get used to their new mounts, when on November 1st, they were embarked at Glasgow, Scotland and set sail for Algiers. The Lancers were part of the British 6th Armoured Division, and their vehicles bore the "Mailed Fist" formation sign. Additionally, the Crusaders and Valentines of the 17th/21st Lancers had the Unit Serial Number (63) centered on the hull front plate, in a 6" square.

The 17th/21st Lancers landed on November 13th at Algiers and advanced into Tunisia as part of "Blade Force"; a small armoured force attached to the 78th Infantry Division. The Lancers rolled across French North Africa on tank transporters and flat cars in a desperate race with the units of Generalmajor Wolfgang Fischer's 10. Panzer-Division.

During the last days of November, the two armoured formations met near the Tunisian village of Tebourba. By November 29th, 10. Panzer-Division had landed the 1. Abteilung of Panzer-Regiment 7. (32 Pz.III and 2 Pz.IV.), two Kompanien of Kradschützen-Btl. 10. (Motorcycle Bn. 10) two Kompanien of Panzerjäger-Abt. 90. (Anti-tank Bn. 90) plus the Div. Headquarters. These were rushed forward, and on December 1st, they launched an attack on the advancing Allies. Between December 1st and 4th, the battle for Tebourba continued, ending in an Allied withdrawal to Medjez-el-Bab. 134 Allied tanks were left on the field and in the olive groves around Tebourba, after the withdrawal.

There is a legend about a German Panzer-Werkstatt-Kompanie (a Tank Recovery/Repair Unit) who managed to reassemble a Tiger I, and re-issue it in 3 days, working from 3 road wheels and the muzzle brake. While this may be an exaggeration, the record of these recovery teams was remarkable. Since the Germans had possession of the Tebourba

battlefield, the armoured hulks were soon under repair; and from 5 knocked-out Valentines left on the field, the Werkstatt-Kompanie of Panzer-Regiment 7. assembled the Valentine V. shown here. The vehicle was then repainted in the Sand-Tan Primer color used by the 10. Panzer-Division (not to be confused with "Sahara Gelb" used by the DAK). The paint was sprayed on, covering all of the original British markings, except the Unit Serial Number, which remained visible although somewhat obscured by overspray. German tactical markings were added over the basic color; these consisted of the German National Markings on the hull front, the turret sides and the rear of the turret stowage box; the 10. Panzer-Division tactical marking (in yellow) on the driver's plate; and the insignia of Panzer-Regiment 7., an American Bison, on the turret side. This last insignia was a stencil placed on the side of the turret while a white (or pale yellow) background was sprayed over it. (See the inset illustrations for details of these markings, the correct sizes, and the locations where they were applied to the vehicle.)



By February 1943, our Panzerkampfwagen "Valentine" had been issued to 1./Panzer-Regiment 7., as that unit moved south to join Feldmarschall Rommel's Panzerarmee Afrika. The "Desert Fox" planned to destroy the Allied 1st Army in Tunisia with a lightning counteroffensive while holding the Mareth Line with the Italian 1st Army. The Allied forces in south-central Tunisia had taken up defensive positions along the Eastern Dorsale mountain range. On February 14th, the Germans moved against these positions, driving back the Americans at Sidi-bou-Zid and forcing a general Allied withdrawal to the Western Dorsale range. By the 17th, the Allies were back in their new defensive lines, but the U.S. 1st Armored Division had suffered heavy casualties in the retreat.



Turret Side - Captured Valentine used by 10. Panzer-Division



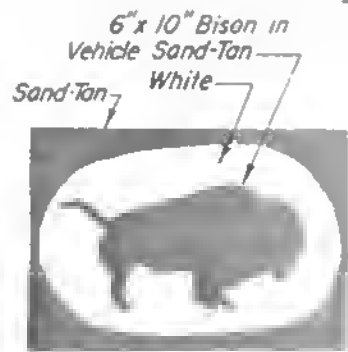
Tactical Marking - 10. Panzer-Division

Now, it was time for the final gamble. Rommel advanced on the Allied line in a two-pronged attack aimed at Sbiba Gap in the North and at Kasserine Pass in the South. The northern attack was stopped cold by the U.S. 34th Infantry Division and the British 1st Guards Brigade; however, Kampfgruppe DAK in the south made considerable progress in capturing the high ground at Kasserine Pass. The next day, 10. Panzer-Division moved forward and passed to Rommel's command from von Arnim's 5. Panzer-Armee (this had been the source of much bickering between the two commanders), and by dusk, all of Kasserine was in German hands. On the 21st, 10. Panzer-Division moved forward again, seeking contact with the British 26th Armoured Brigade opposing them. Against the German Pz. III, 's, Pz. IV, 's, and numerous SP guns, the British Brigade could muster some 60 tanks, but these were almost all Valentines (some from the 17th/21st Lancers) with their inferior 2-pounder guns. The only advantage that the British had was that their tanks were considered expendable. Throughout the first day of the new German attack, the British were able to slow and hinder the Panzers, even though their losses were high. Lt. Col. Hamilton-Russell, the CO of the 17th/21st Lancers had 3 Valentine tanks shot out from under him during the afternoon. Aided by massive clouds of smoke fired from both sides, the British began to disengage and move back to their well prepared "last-ditch" defensive positions; a move that lasted until dusk. But now, the ghosts of Tebourba came back to haunt the British. As the British armor withdrew, Panzer-Regiment 7. moved forward in column, led by the unit's captured Valentine; close on the heels of the retreating British.

As the last tanks entered the defensive perimeter, the infantrymen of the 2nd/5th Leicesters prepared to close the gap. Then, out of the smoke came another group of tanks. Friend or foe? A friendly wave from the crew of what was unmistakably a Valentine answered the question. The column rolled into the British lines with the leading crew contentedly smoking on the turret top. By the time someone noticed that the rest of the column consisted of Panzer III, 's, it was too late. Once through the gap, the Germans opened

SAND-TAN PRIMER

7 pts Floquil RR11 Earth
1 pt Floquil RR63 Mud
1 pt Floquil M11 White



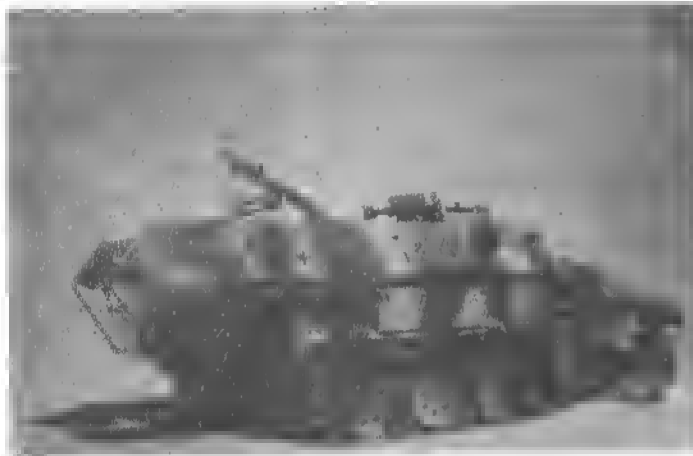
Sign of Panzer-Regiment 7.

ed fire, hitting an ammunition lorry which exploded and illuminated the following fierce fight. The twelve remaining tanks of the 17th/21st Lancers were in the process of refueling, when the fight started. The regimental adjutant, Capt. George Ponsonby leapt into his tank at the first shot, and he engaged the German column at point-blank range, destroying 3 tanks (probably including the turncoat Valentine). Behind the 17th/21st Lancers, the 25-pounder field guns opened direct fire at close range, while Panzer-Grenadiers sprayed machine pistol fire into the confused mess of struggling men. As they had done all that day, the British tankers stood firm, for there was no position to fall back to. All available weapons were brought into the fight, which raged far into the night. Around midnight, the firing slackened and both sides withdrew a few hundred yards. The

(Continued on Page 22)

Converting the NITTO Hanomag Sd.Kfz. 251/1 Model

by Jim Steuard



By now, probably most of our modeling readers have built, or bought one (or more - ?) of the Nitto Hanomag Sd. Kfz. 251/1 kits. Nitto has produced a very popular kit that features the Ausführung B (or Model B) of the standard German armored halftrack personnel carrier of World War II. No other kit manufacturer, foreign or domestic, makes a kit of this famous vehicle, and with this "cornering of the market", it is no wonder that this kit is so popular, in spite of its numerous errors and shortcomings.

As mentioned, the Nitto kit is of an early version of the armored infantry carrier. If a modeler wants to make a kit of a 1940 French campaign vehicle, or a vehicle of the "Deutsches-Afrikakorps", or even a vehicle that was used during the first year of the Russian campaign, then the Nitto kit can be built "from the box" with a few very necessary alterations for accuracy. I suppose that this pleases most modelers. However, the kit offers many possibilities for conversion - to any of the numerous variants, from mortar carrier to flame thrower - or to later basic models of this widely used vehicle.

In this article, I'd like to point the way to do both types of conversions. First, in Part 1., let's convert the kit into the later Ausführung C that saw service from 1942 through 1944. Then, in a later part, I'd like to offer some suggestions as to unusual versions of the Model C that can be easily made, for these articles are not aimed at the extremely advanced modeler, but are for the person who might like to try some fairly simple conversion work.

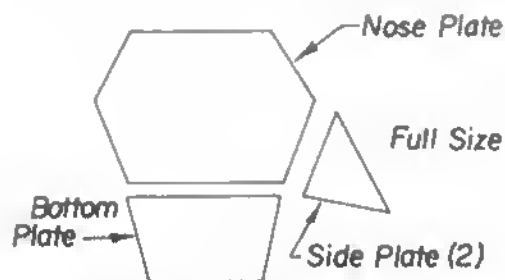
Before starting to work, there are a few things about the kit that should be mentioned. First, the advertised scale of 1:35th is incorrect. By my measurements, the vehicle scales out at 1:33.5; this is far better than 1:35th, especially if you intend to display your model along side of a 1:32nd scale vehicle, such as Monogram's Panzer IV. If you are thinking about making a diorama using the popular 54mm lead figures (from such companies as I-R or Cavalier), then the closer to 1:32nd scale that you can get, the better. Below, we have included a 1:33.5 scale ruler, for those persons who might like to use the drawings published previously in AFV-G2 on the Sd. Kfz. 251 and its variants. You can take measurements in 1:32nd scale and transfer them to the kit, using the 1:33.5 scale. Another thing. the most miserable part of the Nitto kit has to be the rubber "rot-a-track". I am presently working on a method of casting individual track shoes for this vehicle, and I would like to hear from readers who have also been working on methods of improving the track. Perhaps, in a future article, we can cover an easy method of making accurate track. One good part of all this is that track can always be modified later, or even changed, after the model is done. Incidentally, in making my models, I have chosen to delete the motorization brackets or fittings that Nitto has seen to include in their model, in the interest of more accuracy. To heck with making the darn thing run.

To start the conversion to the Model C, first turn to the Lower Hull (part #1). After trimming up the piece, cement a small rectangle of styrene (size not critical) over the bottom of the two slots in the floor of the crew compartment, where the gears (?) went. While this is drying, we can turn to the front of this part. The first modification is to remove part of the front fender overhang; the front slope on the fenders of the Model C were practically deleted. Measure up 7/32" from the front edge (on the slant) and draw a horizontal line to act as a guide. Then saw horizontally from the outer edge

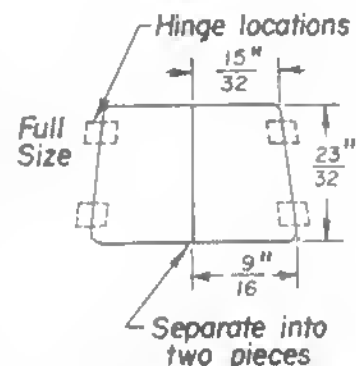


of the fender up to where the fender meets the lower hull. Then, saw upward along the line of the hull to remove the fender front lip. After completing this operation, lightly file and sand off any burrs or rough spots. Now, saw off the bottom angle of the old two-piece nose plate; I cut downward along the inside of the engine compartment, and then cut horizontally across the bottom to remove the piece of plastic. File and sand the lower hull front, and we are almost done with this part. The only remaining job is to fill-in the recesses in the crew compartment that resulted when we cemented the piece of plastic under the floor; you can use almost any of the numerous body putty's for this job, I happened to use that made by Humbrol. Once filled-in, set the part aside to dry and turn to the Upper Hull (part #48).

There are a number of jobs that should be done to the Upper Hull; most of these are easy, if taken slowly. First, I decided that the engine access cover (on the top of the hull) in the kit is far too thick; this was solved by filing the entire engine cover, and the radiator filler cap in front of it, completely off. Be careful while filing so that you do not round-off any of the corners of the hull front. Once the filing was completed (this takes some time to do right), I sanded-off this area to remove any scratches; the larger scratches can be later filled-in with putty. While I had the sandpaper in my hand, I removed the rivet detail from the sloping hull front; this was done to make a better seat for the new front plate. The next job involves the engine ventilating covers on both sides of the engine compartment. These were replaced on the Model C with "hoods" which extended outward from the hull. I took one of the covers from the kit and used it as a locating guide, placing it in the correct position on the model and then tracing around it with a dark pencil. Then, I took a can of Testor's Dull Coat and lightly sprayed over the pencil marks to preserve them during handling. After repeating this operation on the other side, I drilled-out the openings into the engine compartment, being careful to stay inside of my penciled lines. This step would be optional, since the "hoods" will cover the holes, but I added the holes for realism. After drilling out the elongated slots, I filed and sanded them lightly to clean them up. This completed all cutting on this piece. Next, I used body putty to fill-in the radiator grill (a series of slots, actually) at the extreme front of the body. Be sure to pile on enough putty, as the stuff has a tendency to shrink as it dries. While I had the putty open, I also filled-in the indentations in the hull sides where the turn signals were installed. These holes are located just forward of the place where the side vision ports will go. The turn signals on the Model C were moved forward, so these holes are surplus to our needs. I also filled-in all of the various indentations along the hull side where tools and pioneer equipment were carried. Since each variation on the basic Sd. Kfz. 251 had different tool storage, most of these indentations will be in the wrong place, unless you intend to make a straight "infantry version". When completed with all of this puttying, set the Upper Hull aside to dry overnight. After thorough drying the excess putty can be sanded off. The two pieces of the hull should now look as shown in the photo below. We are now ready to start adding altered parts and pieces of plastic to make the Model C.



Templates - Nose Modifications,
Ausführung C, Sd.Kfz.251

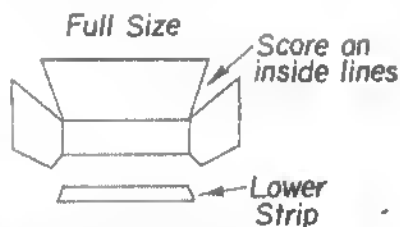


Engine Access Covers
Nitto Sd.Kfz.251 kit

The first part that I added was the new engine access cover. This was cut from .020 sheet styrene per the template in the upper right-hand corner of this page. I cut the cover into the two separate pieces, for more realism. The edge between the two pieces looks far better than a scribed line. The hinge details are built up from two thicknesses of styrene: .030 for the outside half of the hinges, and .010 for the inside part. When the hinge parts are glued to the cover and upper hull, the



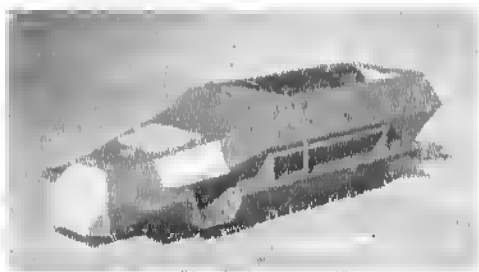
upper surface of the two hinge parts will be flush, looking much as the original. Next, use your circle template and scribe to cut out a small circle of .010 sheet styrene for the radiator filler cap; this was the circular piece just ahead of the engine access covers that you filed-off. When cemented down, this will look just like the original. The next step in my conversion was to create the one-piece nose plate that was so characteristic of the Ausführung C. To start the addition of these parts, fit the two hull parts together (without glue) and wind a rubber band around the forward part of the crew compartment to hold the pieces together. With these parts held together, the nose can be constructed without fear that the later assembly will go awry. Use the template on the preceding page



Templates - Armored Engine
Ventilator Hoods - Sd.Kfz.251 'C'

and cut out the required parts from .020 sheet styrene. After smoothing all of the edges with a file and fine sandpaper, we are ready to start glueing. First, cement the "nose plate" onto the upper hull, being careful to aline it flush with the corners of the hull front. After this has dried, cement the "bottom plate" to the lower edge of the "nose plate", at the correct angle so that it sits against the lower hull. Do not glue the "bottom plate" to the lower hull at this stage. After this has dried, the two small "side plates" can be added to stiffen the front assembly. Again, do not apply glue to the lower hull; else you will not be able to get the two hull parts separated again. This completes the one-piece nose plate.

The next major assembly was the armored engine ventilator "hoods" that extended outward from the engine ventilation holes. These can be constructed by using the templates above, cutting them out from .010 sheet styrene, as I did mine (actually, .015 sheet might be better, for more rigidity, even though it won't be quite scale). After cutting out the main assembly, smooth the edges with sandpaper, and score the fold lines with a scribe. This will help you to get a good sharp fold. Fold the "hoods" with the scribe lines on the inside, and carefully cement the adjacent sides together. For this, I used a liquid cement, as the tube cement always seems to soften styrene too much, into an awkward "glob". After the "hoods" have dried thoroughly (maybe even overnight), the lower strip can be cemented in place, and the ventilator "hoods" can be cemented onto the sides of the upper hull. Aline them carefully, referring to photos or to the drawings of the Sd.Kfz. 251/17 that previously appeared in AFV-G2 for the correct placement. Again, let the assembly thoroughly dry. Your partially converted model should now look like the photograph below. With the exception of a few small details, this completes the basic hull conversion of the Nitto kit to the Model C configuration. Most of these additional details should be added after the model is assembled as the parts are fairly delicate. At this stage, I did drill the holes for the mounting of the turn signals, which were moved on the Model C to a location just behind the ventilator "hoods" that you have just added. The turn signal brackets will have to be modified to fit the different hull slant, but this can wait until the hull is totally assembled. One of the small holes for the turn signals is through the upper hull, and the other is through the lower hull; the two holes should be vertical in relation to each other, and spaced approximately 5/16" apart. See photos or the above mentioned drawings for the exact location of these parts.



This concludes the modifications for this part of the conversion article. We have completed all of the changes to the hull of the model to conform to the changes that the Germans introduced in the Ausführung C of the Hanomag. If you want to go on to

the assembly of the later version of the standard "infantry carrier" version (the Sd. Kfz. 251/1), all that really remains is to complete the model per the kit instructions, omitting part #'s 21 and 23 (as these were rarely seen on the Model C), and part #'s 20, 25, 26, and 36 (as these parts fitted on the "removed" lower nose plate). Take your time when assembling and glueing the two hull parts together, to get the rear doors so that they "work". Actually, I found that it is best to leave them either opened or closed; it took too many "pains" to get them to work right. It is possible to replace these rear doors, making them the actual scale thickness, but this is a little too complicated to cover here. I do feel that it is necessary to make changes in the machine gun mounts, starting with the machine guns themselves. The ones provided in the kit are really miserable; I replaced mine with two H&R MG-34's. The front gun shield should be constructed from sheet styrene, and the correct method of doing this was covered in a preceding Baron's Corner article, so I won't dwell on it here. If you're interested in modeling one of the many variants of this popular halftrack, stay tuned for Part 2 of this article, which will cover two such conversions in detail.



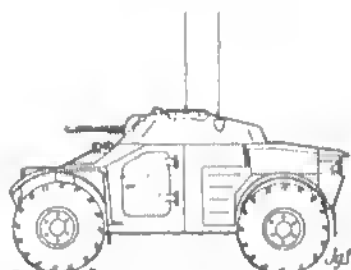
ARMOR G-2

Current Data on the World's
Armored Forces .

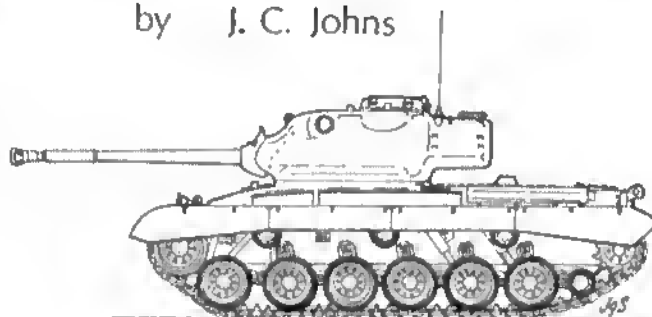
Armor of the Arab Nations; Part 3

by J. C. Johns

SAUDI ARABIA - Armed Forces: 34,000 men
200 AML-90 Armored Cars (ex-French)
100 Chieftan Tanks (on order from Great Britain)
some AMX-13 Light Tanks, 76mm gun (ex-French)
some M-24 Light Tanks, 75mm gun (ex-US)
some M-41 Light Tanks, 76mm gun (ex-US)
some M-47 Medium Tanks, 90mm gun (ex-US)



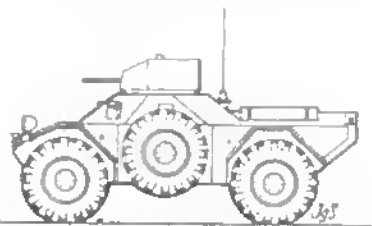
AML 245 Armored Car (ex-French)



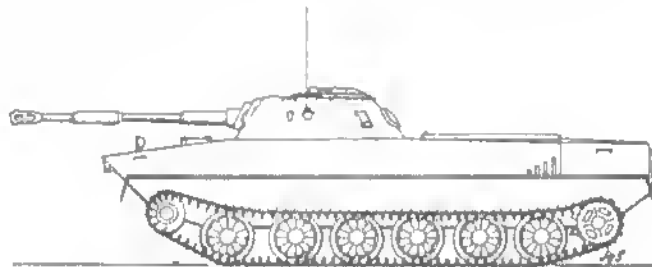
M47 Medium Tank, 90mm Gun, ex-U.S.

KUWAIT - Armed Forces: 5,000 men
12 Centurion Medium Tanks, 105mm gun, (ex-British)
50 Ferret Armored Cars (ex-British)
70 Vickers MBT Tanks on order; due for delivery during 1971 from Great Britain
some Saracen Armored Cars (ex-British)
some AML Panhard Armored Cars (ex-French)

YEMEN - Armed Forces: 10,000 men
30 T-34/85 Medium Tanks (ex-Soviet)
50 BTR Armored Personnel Carriers (ex-Soviet)(what model-?)
some T-54 Medium Tanks (ex-Soviet)
some PT-76 Light Amphibious Tanks, 76mm gun (ex-Soviet)



Ferret Mk.2 Armored Car (ex-British)

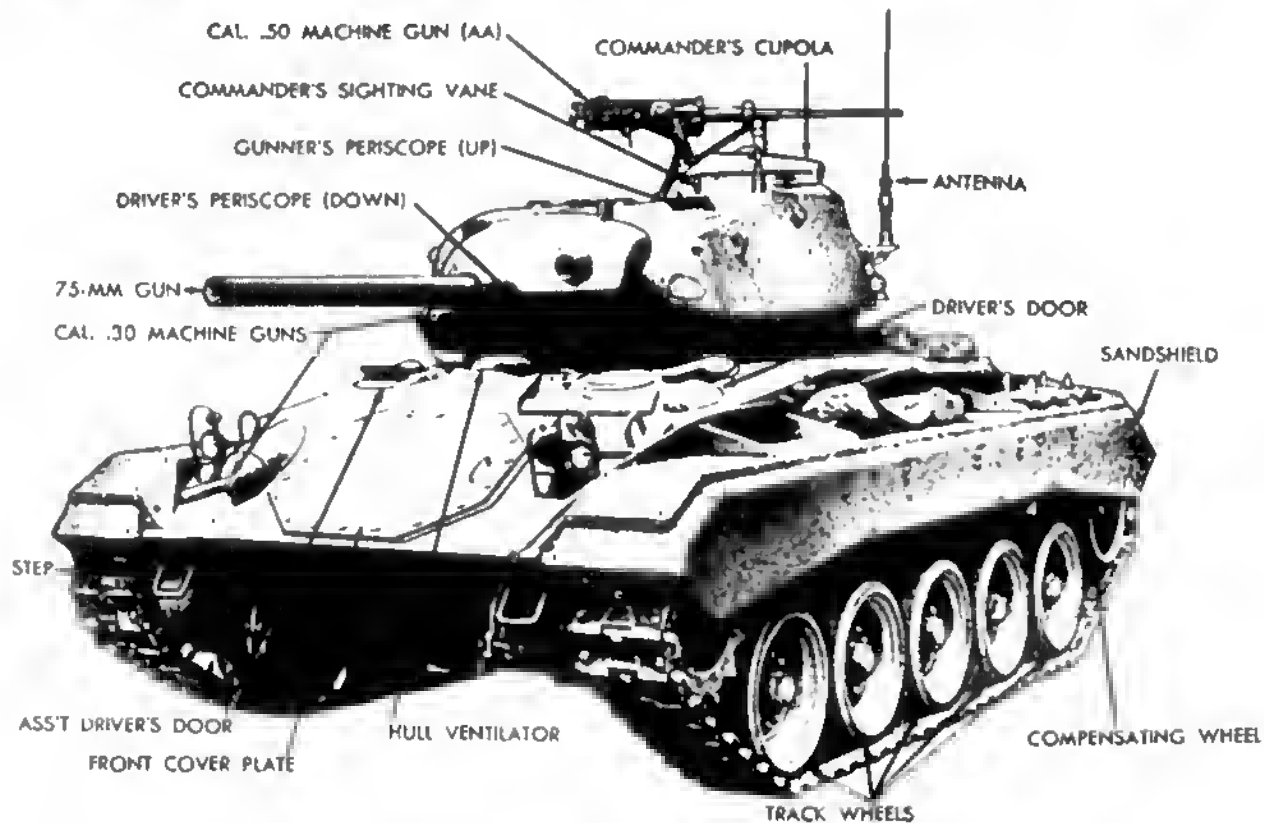


PT-76 Amphibious Tank (Soviet)

SOUTHERN YEMEN - Armed Forces: 12,000 men
40 T-34/85 Medium Tanks (ex-Soviet)
25 BTR Armored Personnel Carriers (ex-Soviet)(what model-?)
some T-54 Medium Tanks (ex-Soviet)
some Ferret Armored Cars (ex-British)

PALESTINE GUERRILLAS: During 1967 war, used Syrian T-34/85 and T-54 Medium Tanks, with Syrian crews; captured some Jordanian Centurion Mark 9 Medium Tanks, but later lost them. The guerilla organization presently has no armor of it's own.

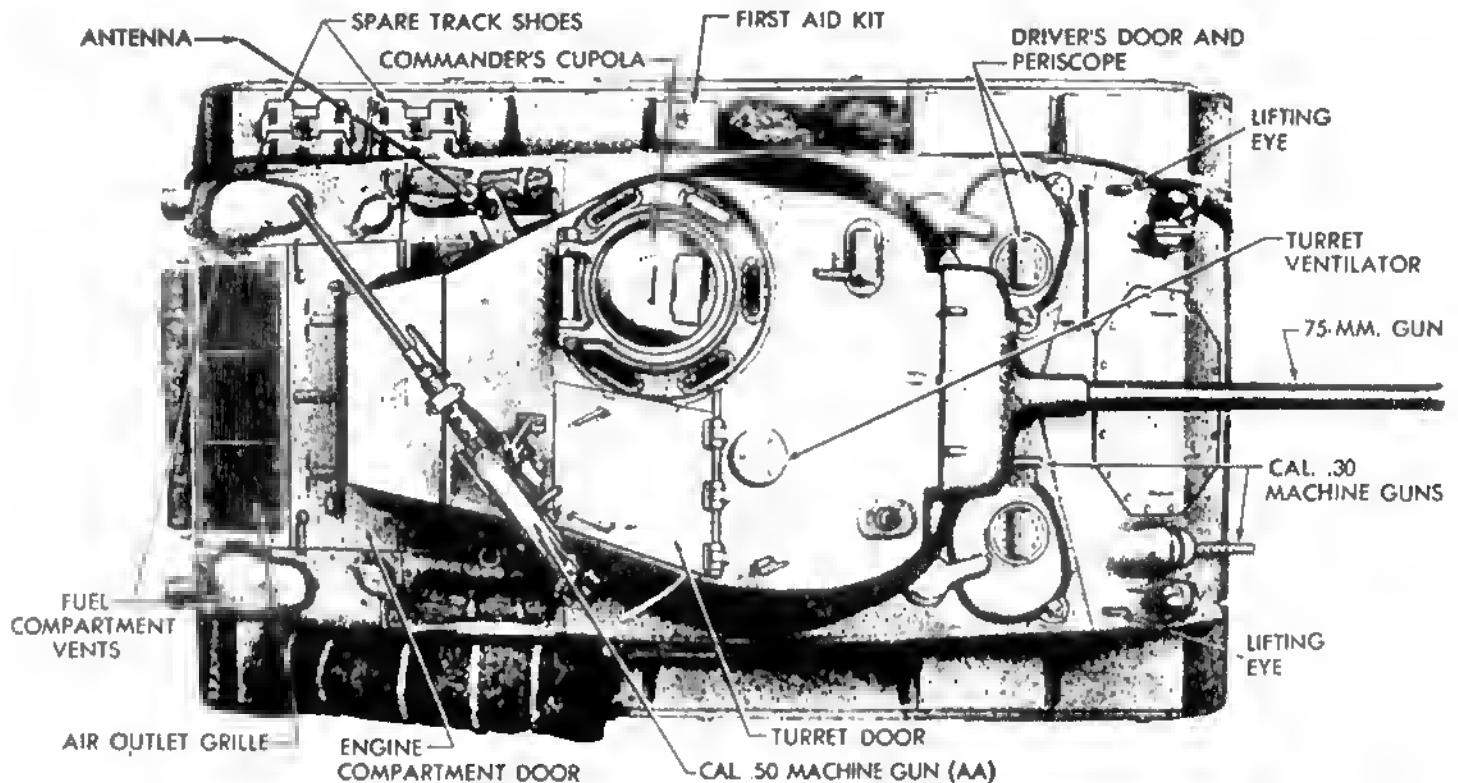
DETAILS FOR THE MODELER



These photographs were taken from the U. S. Army Technical Manual TM 9-729, dated May 1951, and titled Light Tank M-24. The vehicle shown in the photographs is a late production tank, which differed in numerous details from the early versions, such as the one illustrated in last month's five-view drawings. A very obvious difference is in the mounting for the Commander's .50 caliber AA machine gun, which was changed from the pedestal mounted on the cupola ring to a tripod arrangement which allowed the Loader to fire the machine gun from his hatch if the need arose.



The M-24 CHAFFEE Light Tank



The above top view clearly shows the on-vehicle stowage of equipment. Of special interest is the second radio-antenna mounting on the right front of the turret top. This mount was not used for those vehicles assigned to armored units. When M-24 tanks were used in direct support of Infantry units, an adaption of the standard infantry back-pack radio was fastened to brackets on the inside of the turret roof, and the front antenna mount was used instead of the rear antenna. This allowed the tanks to communicate directly with the Infantry. Early production versions of the M-24 had a spotlight mounted on the turret top, just forward of the Commander's cupola. This spotlight could be removed and coupled to a long cable (on a reel) which could provide the Commander with a strong dismounted light if it was needed; the cable could be extended out through any hatch. This was deleted on late tanks.



Commander's Cupola, showing vision devices and hatch.

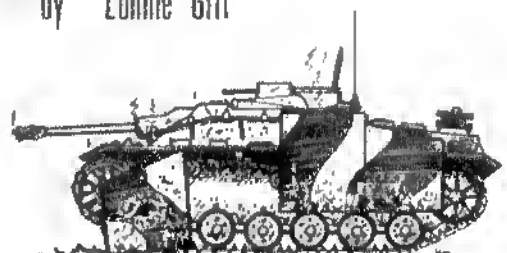
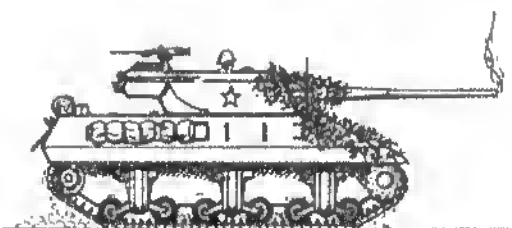


AA .50 Caliber Machine Gun Mount on Turret top.

Seek, Strike and Destroy

Part IV. HVAP Ammunition

by Lonnie Gill



Tank attack was the most shocking tactical development of early W. W. II. Each participant had to come up with a solution to the new problem which threatened the pace of earlier tactical thinking. The United States, with typical New World vigor, turned with a vengeance and created a new force to deal exclusively with stopping tank attacks. In the preceding parts of this series, we have traced how the ideas were transformed into a viable and powerful Tank Destroyer Force with its own organization and equipment. World War II was a technical war, and men found that success depended on superior equipment. The success of the Tank Destroyer Force depended on continuous development by the Ordnance Department at home, especially in the search for better ammunition.

Perhaps the most important and interesting of the many achievements on the home front was the development of HVAP ammunition. Like most other countries, the United States was busy working on ways of increasing armor penetration as tanks grew increasingly heavier and better armored. Penetration, of course, depended on two factors; the striking velocity and the mass or inertia of the projectile. Therefore, one way was to use bigger guns, but this couldn't be a final solution as there was a limit to the size of guns that crews could handle, and more importantly, bigger guns meant bigger vehicles with all of their attendant problems.

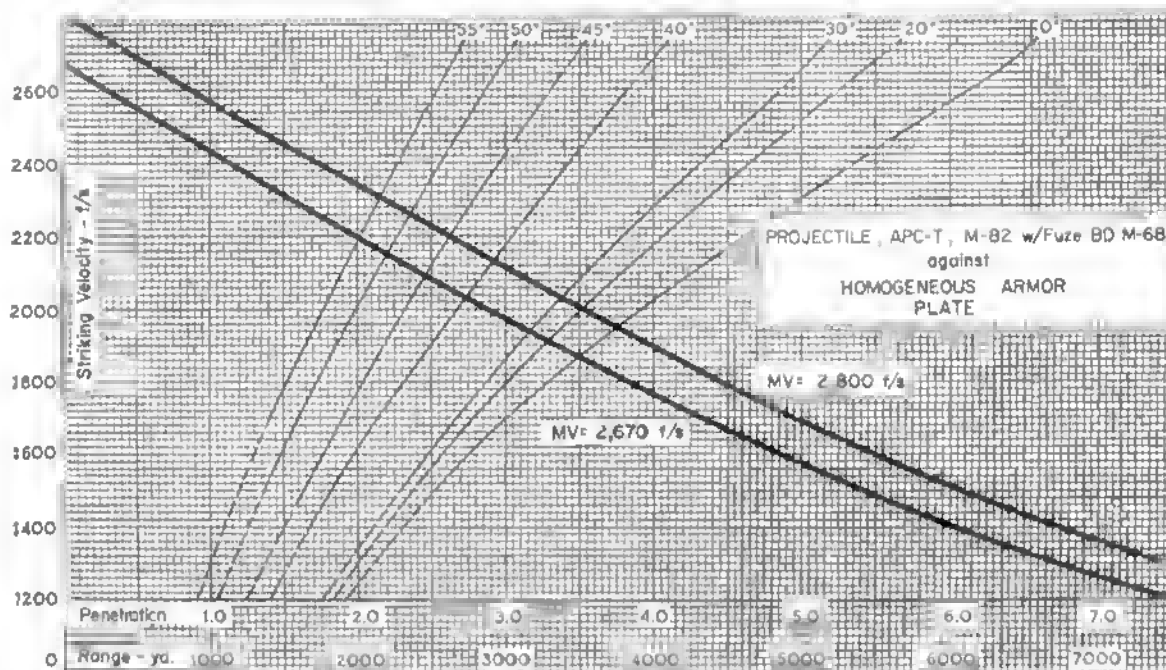
Research turned instead to ways of increasing the striking velocity of the projectile, which had the additional advantage of a flatter trajectory, resulting in greater accuracy. The initial or muzzle velocity of a projectile could be increased by using bigger charges, longer barrels and stronger guns. Since there were limits to the stresses that guns could take and high velocity shortened the gun tube life drastically; this again was only an interim solution. Additionally, when the muzzle velocities of the 3 inch, 76mm and 90mm guns were increased, it took considerable time before a flashless round--without which the ambush tactics of Tank Destroyers were useless--could be made compatible with the higher propellant densities required. Developing new guns was expensive and very time consuming--not to mention wasteful if the obsolete guns were to be junked. Thus research turned to improving the projectiles themselves.

If a projectile weighing only half as much could be fired using the same charge as a standard round, muzzle velocity would be greatly increased. Since the new round had to have just as large a diameter as the standard shell, a composite round consisting of a hard core surrounded by a light metal jacket was necessary. Here was the solution, but it had drawbacks. First, the core had to be of extremely rare tungsten-carbide, the hardest known metal, to prevent it from shattering when it hit. Secondly, since a composite round had the same cross-area but less mass-inertia, air-resistance had a greater effect on it. As the range increased, the performance of the composite round decreased until at long range it was no better than a regular A. P. round. (This later limitation was later eliminated by discarding the light metal jacket after the projectile left the gun, but the Discarding-Sabot projectile was not used during the war by the United States.)

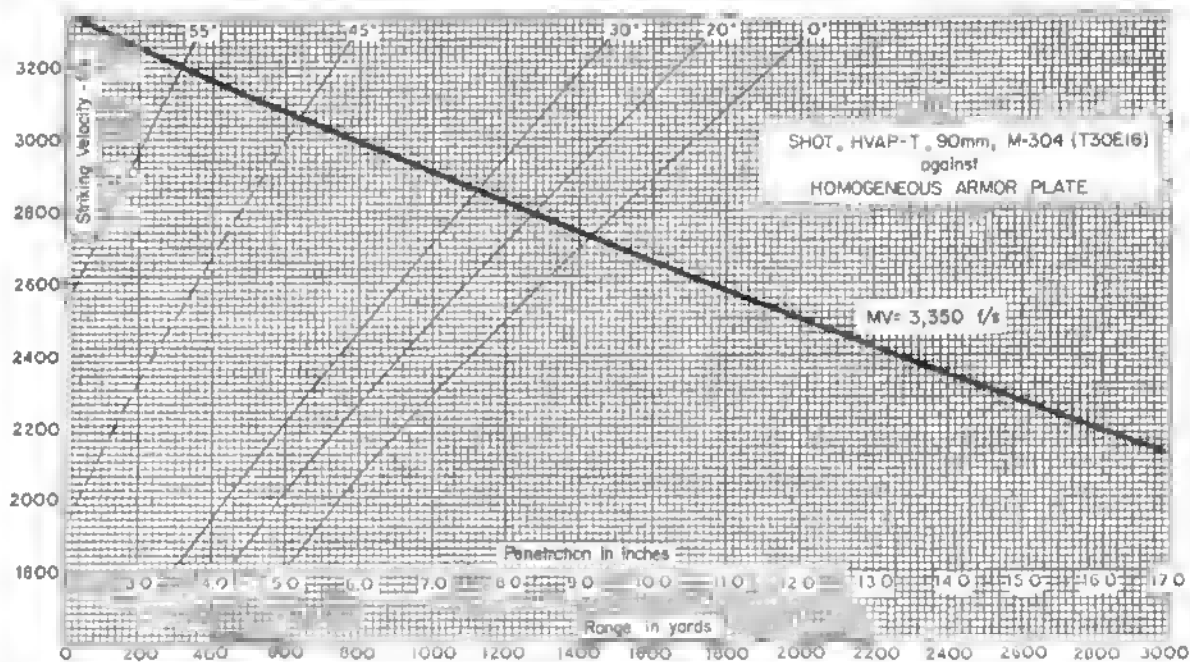
The Germans had been the first to develop a composite round, the AP 40, after clashing with Matildas in France. In the U. S., development continued at a slow pace since Army Ground Forces insisted that such exotic ammunition was unnecessary. Normandy, however, changed all that. Following an inspection of a captured Panther tank at Bradley's headquarters, General Eisenhower, in a top-secret communique on "D plus 30", asked the Ordnance Department if it could develop a means of penetrating the heavily armored Panthers and Tigers the GI's were now meeting.

Of course, no such round was ready on that July 7, 1944, but the Ordnance Department immediately made their composite round program top priority. The Department had been working with the Carboloy Division of General Electric to develop a tungsten-carbide core and the Ordnance Department asked the Carboloy Division if it could turn out some test cores immediately. In one of the great achievements of industry, ten cores, finished to exacting specifications, were ready only two days later. By Monday, July 10th, the cores were on a plane to Aberdeen Proving Ground.

Performance Charts for the 90mm Gun M-3, Firing Armor-Piercing Ammunition
(Charts from the Hunnicut Collection)



Armor-Penetration Chart, 90mm APC-T M-82 (Armor-Piercing-Capped Shot with Tracer)



Armor-Penetration Chart, 90mm HVAP-T M-304 (Hyper-Velocity Armor-Piercing Shot w/ Tracer)

By Thursday, the tests were conclusive; the new projectile would penetrate the thickest armor, even at 20 degree angles. The new HVAP (Hyper-Velocity Armor Piercing) round had a tungsten-carbide core surrounded by an aluminum jacket. The M-93 HVAP projectile weighed only 15.44 pounds. Muzzle velocity increased from the standard 2600 ft/sec to 3400 ft/sec. Later, a HV AP projectile was developed for the 90mm gun also. The M-304 weighed 16.8 pounds compared with 24.11 pounds for the standard M-82. The muzzle velocity was increased to 3350 ft/sec.

Less than two weeks after the tests, the first production rounds were ready. They were flown direct to France to prevent any shipping delays. While never plentiful, special priorities kept HVAP in stock for front line troops during the later part of the war.

An example of the effectiveness of HVAP was given in a report of the 893rd Tank Destroyer Battalion, then using M-10 76mm Gun Motor Carriages:

"On the 5th of November, the 3rd Platoon of Company B was in the town of Kommerscheidt, Germany, where heavy fighting was going on. About 1500 hours on this day, the destroyer commanded by Sergeant Sicanevage sighted a Mark VI tank parked by the side of a house, at a range of 1400 yards. The destroyer was in a defilade when the tank was sighted, so it was pulled out into a firing position. The visibility was very good at the time and the destroyer fired 3 A.P.C. shots directly at the front of the stationary tank. Hits on the tank were observed, but there was no apparent damage. One round of H.V.A.P. was then fired directly at the glacis plate and the tank burst into flames."

The accompanying graphs compare the relative performance of standard and HVAP ammunition. Except for the dotted lines which represent mathematical projections, the data is based on tests at Aberdeen, conducted under optimum conditions. The graphs are read as follows:

1. Pick a desired penetration in inches on the upper horizontal scale.
2. Move vertically until the desired slope curve is reached.
3. Move horizontally from the interception point until the striking velocity curve is reached. This gives the impact velocity which can be read in ft/sec on the vertical scale at the left side of the graph.
4. By moving downward from the interception point on the striking velocity curve, the maximum range for penetration can be read in yards on the lower horizontal scale.

As an example, 3-inches of armor plate at 20° slope can be penetrated by 90mm HVAP at 1710 yds.

Color 'n Camouflage: "Panzerkampfwagen "Valentine" (Continued from Page 13)

Germans took with them some 700 prisoners, but it made little difference to the final outcome. Although Rommel had not been defeated, he had been stopped. During the early morning hours of February 22nd, the U.S. 34th, 60th and 84th Field Artillery Battalions arrived at Thala and were deployed. At dawn, the six remaining tanks of the 2nd Lothian and Border Horse counterattacked into the German camp. Five of the British tanks were destroyed, but 10. Panzer-Division was so unsettled that no German attack was launched that day. On February 23rd, Rommel withdrew his forces from the Kasserine Pass area.

On the ridge overlooking Thala, however, there remained seven German tanks as a "high water mark" of the advance. Among them was one "Panzerkampfwagen Valentine", now restored to its former owners, the 17th/21st Lancers.

CORRECTION: There was an error printed in the Panzerjäger Ib, article that appeared on page 20 of Volume III., Number 1, and we would ask readers to please pencil in the change. The last paragraph should read: "Each of these four battalions was formed with a Headquarters Company and three Panzerjäger-Kompanien, equipped with six guns each, making a total of eighteen guns per battalion. All units saw combat during the French campaign....."

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Book Review: Pershing - A History of the Medium Tank T20 Series by R. P. Hunnicutt
(Feist Publications, Berkeley, Calif., 1971, \$16.50) Review by Jim Garrison

Rarely does such a book as *Pershing*, by R. P. Hunnicutt, come along. To call it a complete coverage of the subject would be an understatement. In the introduction, the author states that his research covered a ten-year period. An examination of this book would convince anyone of that fact. This book is one of the finest coverages of a single vehicle in the armor field.

The book is divided into four sections: World War II service, Development, Korean War service, and finally a Data section. The coverage of the European service is outstanding. The author accounts for most of the "Pershings" delivered to Europe and gives the histories of some of the first vehicles to see action. The first part of this book will end forever the debate over the number of M26's in service in Europe.

The presentation of the development of the "Pershings" and the T20 series tanks is the best I've ever seen. It will serve as an example for books and articles of its kind in the future. Each prototype in the series is covered with a 1:48 scale drawing by D. P. Dryer with many photographs of the interior and exterior. Many cutaway and component drawings and photographs are also included. While this might give the presentation a choppy appearance, the text actually flows from one subject to the next.

The Korean service coverage centers mainly on the first part of the war when the "Pershing" was used to turn the tide of the fighting. This section contains many fine pictures of the vehicles mentioned in the text. The data section has a table for each vehicle in the series and a table for each U.S. gun mentioned in the book. This section alone is worth the price, especially to data collectors and wargamers.

The photographs throughout the book are of the highest quality and many have never been published before. There are also many color drawings by Uwe Fiess. This book will be a must for anyone interested in heavy tanks or U.S. armor. While this book is high priced at \$16.50, it is worth many times that price.

Book Review: British Military Markings, 1939-1949 by Peter Hodges
(Almark Publications, Middlesex, England, \$5.50) Review by Bill Platz

When I plunked my \$5.50 down on the counter of my local bookseller, I had high hopes that this small (64 pages) but crowded volume would at last solve the riddle of British markings. Never again will I believe another dust jacket!! *British Military Markings* is not the comprehensive guide that it claims to be - it would be better titled: 21st Army Group Markings and Organizations! Yet, it still contains a wealth of information. Unfortunately, much of this has been published before. The real disappointment, however, is the complete lack of coverage of the Desert War, particularly since the Middle Eastern Forces used a different set of Unit Serial Numbers. In all fairness, I must say that the coverage of the North West European campaign is excellent, and the Royal Artillery units are very well done. Nevertheless, it is still a pity that they couldn't find a few words for us old "Desert Rats".

To have a book reviewed in this section, a sample or review copy should be sent to Baron Publishing Company, P. O. Box 293, La Puente, CA 91747, Attn: Book Review. Be sure to enclose a business address to where correspondence may be directed.

The "kleines Kettenkrad" Tracked Motorcycle
by Jim Steuard

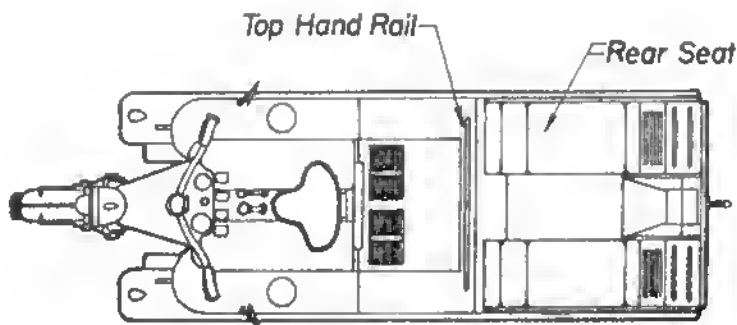
Of all of the strange machines-of-war invented, perfected and used by the German Military Forces in World War II., perhaps the most unusual vehicle was the Sonder-Kraftfahrzeuge 2. This vehicle, officially designated the "kleines Kettendrad", was a strange cross between a motorcycle and a halftrack. Originally designed as a light-weight towing vehicle (or Zugmaschine) for the Luftwaffe (Air Force) paratroops, it was pressed into service on the Eastern Front throughout the war, replacing regular motorcycles in field units, and handling communications and supply duties, as well as regular towing jobs for the Air Force and Mountain troops. It became so important in these duties that units leaving Russia for service on other fronts, or for re-training in non-combat areas, were directed to turn-in their "Kettenkräder".

The basic idea for the tracked motorcycle came from a pre-World War I. French machine that was similar in construction. The French Schneider firm developed this early vehicle in limited quantity, and it had received world-wide press coverage when it was used by the French Polar Expedition to cross extremely rough and broken terrain. This concept was also experimented with, by the French, during the early 1930's.

In 1939, with the start of war, the German Luftwaffe expanded the small force of Fallschirmjäger (or Paratroops), based on the expected need for these air-born "shock troops". It was anticipated that these troops would need a towing vehicle to pull their anti-tank and small artillery pieces. This vehicle must be heavier than a motorcycle, yet smaller and lighter than a light car, with a towing capacity of under one ton. The original specification, designating the vehicle as the HK-101, was issued to the NSU-Werke AG, located in Neckarsulm in southern Germany, as it was felt that a motorcycle firm would be better equipped to design this type of machine. The NSU firm had produced an excellent series of simple, robust motorcycles during the 1930's, culminating in the NSU 601 OSL, a 600cc single-cylinder machine. While these motorcycles did not have the popularity of the BMW or the Zundapp machines, they were used in almost all of the numerous motorcycle races sponsored by the Nazi party during the late 1930's, with a fair degree of success. Since BMW and Zundapp were occupied with war production of large, side-car equipped motorcycles, the NSU-Werke AG was a logical and sound choice for the HK-101.

The "Kettenkrad", as it came from the factory, was a rather strange-looking contraption. It used a 1.5 liter capacity Opel Olympia car engine for power. As Opel had stopped production of the car that originally used the engine (to concentrate on trucks and heavy vehicles), it was quite easy to switch production over to the NSU company. The engine was a four-cylinder, water-cooled, in-line power-plant that was positioned behind the driver in the center of the Ketterkrad. The output of the engine was a fairly substantial 36 horsepower @ 3400 r.p.m., and it drove the vehicle at a top speed of 70km/hour (39 mph) through a three-speed transmission. This transmission was provided with two gear ranges, for either road or cross-country use. The radiator for the engine was located in front of the engine (just behind the driver); later models had additional side vents to increase the air circulation for cooling of the easily-overheated powerplant. There were two saddle fuel tanks, one on each side of the engine. Each held 21 liters (5.5 gal.). Based on the total amount of fuel, the Kettenkrad had a range of 260 km on roads, or 190 km in cross-country use. The track system was scaled-down from that of the larger 1-ton standard halftrack; there were four interwoven road wheels, and a front drive-sprocket with roller bearing teeth. The original tracks were all-steel, but rubber pads were soon added, for better life and ride. Like its bigger counterpart, the tracks of the NSU Kettenkrad were complete with self-lubricating (?) needle-bearings, which required a degree of maintenance to keep trouble-free. The track width was 170mm (slightly less than 7-inches). The front suspension consisted of a rather normal motorcycle fork arrangement; and the front tire was a motorcycle 3.50 x 19.

The first service Kettenkrad's reached troop units in June of 1941, just in time for the invasion of Russia. They continued in production until 1944, when the need for such sophisticated equipment had passed. In 1943, production was also initiated at the Stoewer factory in Stettin; their vehicle differed in minor details from the NSU version. A grand total of 8,345 machines were produced. These vehicles were used by every unit that could somehow acquire them, for they had a cross-country capability that was better than almost any small vehicle of the Wehrmacht (with the exception of the Schwimmwagen and possibly the Kübelwagen). Several photos have been published that show the vehicle in deep water or mud. It is interesting to note that the German postal service

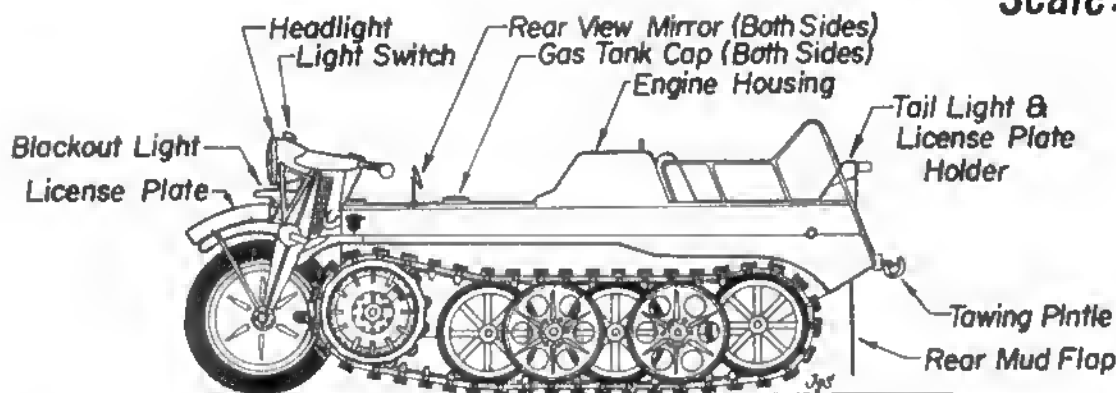


Top View - NSU Kettenkrad

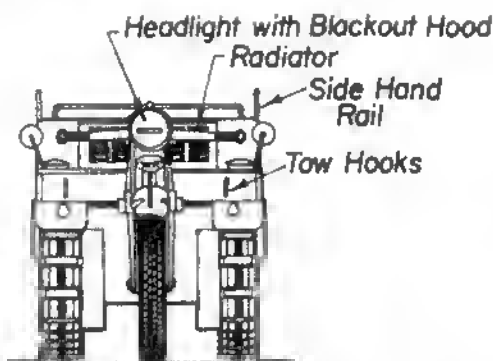
NSU Sd. Kfz. 2 kleines Kettenkrad

Drawn by: J Steuard

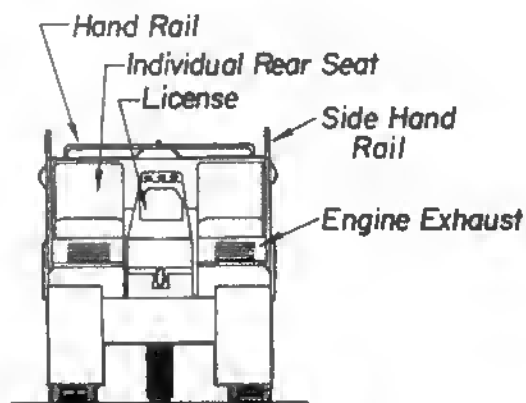
Scale: 1:32



Early Production NSU Kettenkrad



Front View - Sd. Kfz. 2



Rear View - Early NSU Kettenkrad

issued a commemorative postage stamp in 1943 which depicted the Kettenkrad climbing a hill. Since its cross-country capability was so good, two variants, the Sd. Kfz. 2/1 and the Sd. Kfz. 2/2, were constructed in small numbers as "cable laying" vehicles for communications units that were involved in laying telephone cable over rough terrain. Following the war, surplus Kettenkrads were used (to the tune of about 100 vehicles) by the Land- und Forstwirtschaft (Land and Forestry Service) to negotiate poor terrain, and there is still a requirement in military forces for a vehicle of this type; light, yet powerful, and capable of crossing mud, snow and rough terrain, through all kinds of weather.

After the end of Kettenkrad production in 1944, the NSU Werke turned to the manufacture of fully-tracked, radio-controlled demolition vehicles. These vehicles, called the Funklenkpanzer "Springer", used components of the track system of the Kettenkrad (with six inter-woven wheels instead of four) and the same Olympia car engine for power. This production lasted until the end of the war. The NSU Werke was able to survive the post-war depression in Germany, and it returned to the production of small efficient motorcycles. Manufacture of these machines, most of which were single-cylinder, over-head valve types, continued until approximately 1957. Today, the NSU firm manufactures automobiles, some using the revolutionary Wankel rotary engine, and a suitable epitaph for the NSU Werke might read: "sometimes strange, but always inventive". Certainly, the Sd. Kfz. 2 "kleines Kettenkrad" would fit into this category. (Special thanks to Tankette Magazine for their assistance on this article)



Wargame Review

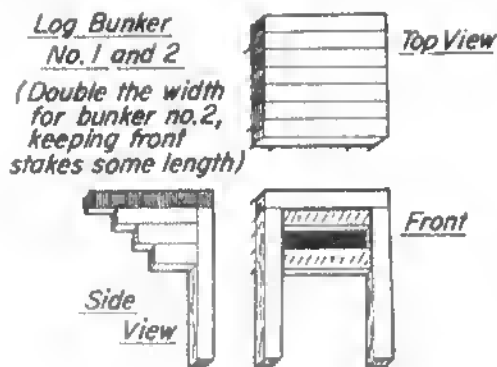
Sand Table Fortifications - Part I.
by Gary Gygax

While there are plenty of AFV's and infantry models for use on your newly constructed sand table, there are only a few pieces of plastic terrain with trench and bunker systems. Worse still, there are no models of machine gun positions, pill boxes, and the like. A well-rounded series of battles or a continuing campaign will soon have an armored force attacking a fortified position, and it is up to the wargamer to devise his own fortifications.

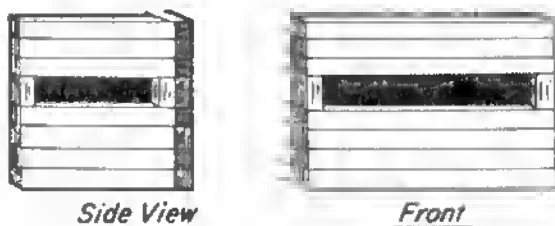
"H-R Battlegrounds" has ten HO scale terrain pieces on the market, but they are no longer manufacturing them! If you want to buy any of these "battlegrounds", better send for them now. Although putting them into the sand when "discovered" by the enemy causes no little disturbance to the terrain, these "battlegrounds" are certainly worthwhile. Now on to scratch building your own.

The materials needed are few and cost almost nothing -- I assume that everyone has glue and paint around, and won't need to go out and make special purchases to obtain such items. A box of kitchen matches, the tops from aerosol containers of whipping cream, and the plastic covers from Mini-Tank models completes your list. From these can be made log bunkers of varying sizes; small round pill boxes; and concrete block houses. If emplacements for large caliber coastal artillery are desired, add the tops from aerosol cans of hair spray to the materials list.

Log Bunkers: After cutting the heads off of the kitchen matches, soak the sticks in coffee to give them the right color. If a darker shade of brown is desired, the finished bunker can be touched up with a bit of paint. Three basic constructions are used: 1) $3/4" \times 3/4"$ for machine guns; 2) $1-1/2" \times 1"$ multi-purpose; and 3) $1-1/2" \times 1"$ gun emplacements. The first two consist of nothing more than a roof, a slit for firing, and a pair of stakes in front to hold the bunker in the sand. The third stands higher, and resembles a small shed (which gives you a hint as to how to disguise fortifications when playing). See the sketches below.



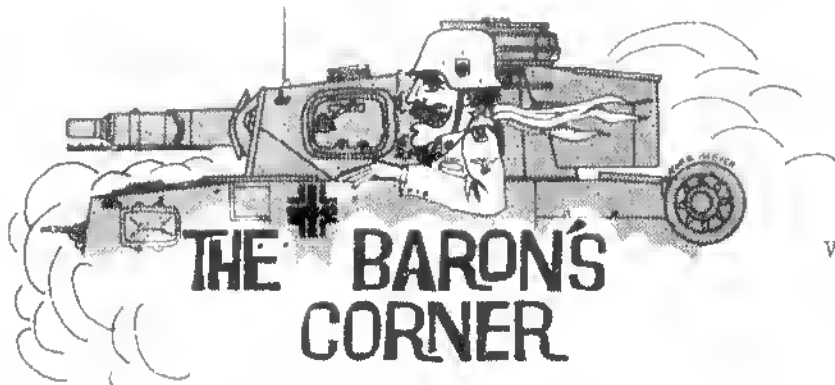
Log Bunker No. 3 (Top View omitted, Rear opening can be in style desired. Side firing slits can be omitted or made smaller.)



When set into the sand, the roofs of the 1) and 2) type of bunkers will slope back. When used on a slope, the roof serves to keep the sand above from falling into the position.

The base of the 3) type of bunker should be set into the sand about $1/4"$. For a sloped roof, push the back down slightly more than the front. This type of bunker looks best when set into a hill side, with a little sand heaped in front and along the sides.

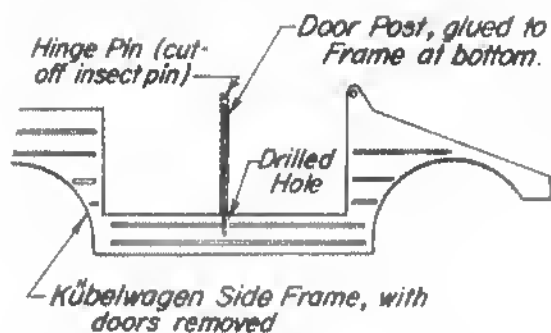
Prefabricate sections of match stick roof, sides, and fronts, so that sections can be readily assembled into a bunker. This will cut down on the time required to build half a dozen bunkers. Leave some of them as "natural" logs and others can be camouflaged with lichen and/or paint. A small space under the bunker should be cleared and smoothed down, so that troop figures may be placed within the structure. If desired, a removable roof can be used with the 3) type bunker, so that casualties can be removed.



Would you believe..... Working Doors for your 1:35th Scale Tamiya Kubelwagen by Norb Meyer

After having put together one of the simple Tamiya Kubelwagen kits, it came to my mind that a number of very interesting modifications are possible that aren't too difficult, and that will make that "bucket car" really stand out on display or in any diorama. Perhaps the biggest change that could be done would be to hinge the doors so that they work like the original ones.

To get started, first remove the doors from the car side frames. This is best done by using a scribe to make the first line, then following these lines with an Xacto knife as a scribe. Be careful and keep scribing with the knife blade until you cut through the plastic. This takes time, but your patience will be well rewarded with doors that are a close fit. The doors furnished in the kit



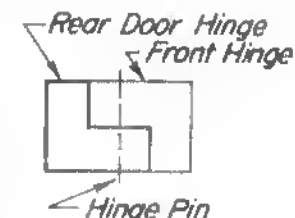
Door Post Installation Details

are rather bare on the inside; the original doors were stampings with indentations clearly visible on the inside. Take a sharp pencil and draw guide lines on the inside to match the ribs on the outside of the doors. Now, take a small triangular file and carefully start to scribe a groove into the plastic, being careful to follow your lines. After you have a good start, switch to a square file to widen and deepen the grooves so that they match those on the outside.

The first step in mounting the working doors is to construct a "door post" that will hold the doors and act as a pivot for the hinges. Cut a 1mm wide strip of .030 sheet styrene approximately 7/8" long (one strip for each side); heat one end and carefully bend 3/32" of the strip at a

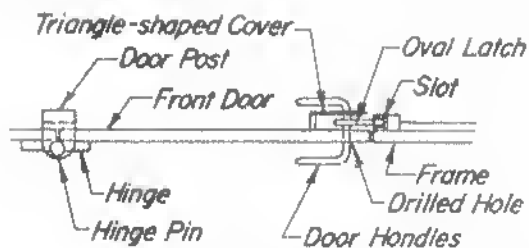
right angle to the rest of the strip. Match this with the strip for the other side, and then round off the bent ends (see top view below). Now, obtain two insect pins (for the door hinge pins) and a small drill that matches the diameter of the pins closely. Drill a hole through the bent portion of the door posts; this will be the upper brace for the hinge pin. Next, drill an identical hole in the car side frame, at the point where the frame angles inward (this is quite apparent), aiming downward into the thickness of the frame. See the side drawing above, for clarity. When this operation is finished, cut the insect pin to the correct length to fit snugly down into the frame, while being supported by the door post at the top. Insert the insect pin into the door post, and then into the hole in the side frame. Using the pin as a jig, you can now glue the door post at the bottom of the side frame. While this is drying, we can tackle the hinges themselves.

To make the hinges, cut a long piece of .010 sheet styrene, about 2mm wide; this will be the hinge material. Heat this strip carefully, and bend it double around another insect pin (to get the inside diameter right). While holding it bent double, apply a small amount of liquid glue between the ends, and smash them together using needle-nose pliers.



Door Hinge Details

When smashed together, let them dry while being held by a clothes-pin. Once dry, the hinges can be trimmed to the correct size, using the hinges on the Tamiya doors for a guide. The front and rear hinges should butt together, as indicated in the small sketch above, so carefully trim each hinge so that it fits into the one on the corresponding door. This is best done with an extremely sharp Xacto knife! After all this is done, the hinges can be glued in place on the doors. Assemble everything together and see how easily they swing. The next step is to construct the door latches.



Top View - Door Latch and Hinge Details

Continued on Page 30

German Wehrmacht and Waffen-SS Heavy Tank Units
Part I. by Jim Steuard

After mid-1944, almost all German Army Panzerkampfwagen VI. "Tiger" or "Königstiger" heavy tanks were employed in separate non-divisional tank battalions classified as Army or Corps-level troops. The earlier practice of assigning a single company, or in several instances a battalion, of these heavy tanks directly to Panzer- (and in one case, Panzer-Grenadier-) Divisions had been ended for numerous reasons. First, maintenance requirements for these large tanks were so critical that they overloaded the Panzer-Werkstatt- (or Repair) units of the Panzer-Regiment that the vehicle was assigned to. For every operational "Tiger", often three or four were in the divisional rear areas, awaiting replacement parts, or repairs, or both. The highly technical repair units usually had their hands full trying to keep the many other armored vehicles running, much less care for "sick" Tigers. Another reason for the changes in organization came about because of the need for a more centralized control of the extremely powerful tanks. Units that were under Army or Corps control, instead of Division, could be held in reserve until needed, and then sent forward to the exact division or spot where urgently needed. When one considers the fact that a single company of Tiger tanks had more firepower than an entire battalion of the 8.8cm Flak guns, the value of central control of these vehicles becomes apparent.

The formation and training of all Army heavy tank units came under the control of Ersatz- und Ausbildungs-Abteilung 500, (Replacement and Training Battalion 500), the unit that provided almost all of the trained crews for the combat tank battalions. This unit was located during most of the war at Paderborn, and it sent personnel replacements to all of the various fronts where Tiger were used. When the complexity of the Tiger tank is realized, E- und A-Abteilung 500, 's importance can also be realized, as it trained the highly-skilled necessary crewmen for the heavy tanks, as well as provided continuous information in the form of technical bulletins and technical inspection visits to all of the user units.

In the fall of 1942, a single combat company of Tiger tanks was formed from the instruction staff of the training battalion, for combat on the Russian front; this unit, the Tiger-Versuchs-Kompanie (or Tiger Experimental Company) was employed by Hitler's orders prematurely, in the deep snow of the Russian winter, on the Leningrad front. All vehicles were lost, under tragic circumstances, when they were caught in a single column on a road, and were destroyed by Soviet AT guns. The first combat tank battalion of heavy tanks to be formed was schwere-Panzer-Abteilung 501, which was formed in the late fall and winter of 1942. This unit was sent to Tunisia in early 1943, and readers can be referred to an article that appeared in Volume 2, Number 3 of AFV-G2 for a brief history of this unit, which saw combat during the closing days of the war in North Africa.

The next unit of Tiger tanks to be formed was schwere-Panzer-Abteilung 502. This unit was also employed on the northern sector of the Russian front, however, with better results than the experimental company-sized unit. It saw hard fighting during the Russian winter offensive of 1943/44 near Narwa, Estonia. Several members of this unit are justly famous, including Leutnant Otto Carius, who was decorated with the Oakleaves to his Knight's Cross, after two years service with this heavy tank battalion.

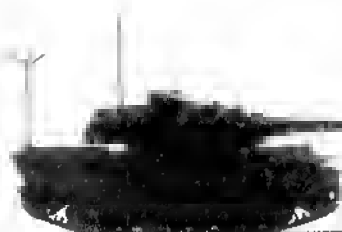
Other units were formed with Tiger tanks, or the later Königstiger tank as it became available; these units were numbered in two different series, depending upon the composition of the battalion. The units, outlined above, were typical of the "pure" Tiger units, and all of these were numbered in the low "500" range, from "501" through "510". A second type of heavy tank battalion was created in 1944; three battalions apparently were formed in the low "300" series of numbers. (The units numbered "301", "302" and "303" have been identified.) It is also believed that these units were formed with Tiger I, tanks that became available when other units converted over to the later Königstiger version of this tank. These units were formed with the designation Panzer-Funklenk-Abteilung, and they were equipped with radio-controlled demolition vehicles in addition to the normal complement of heavy tanks. Very little information is known as to the combat employment of these latter units, except for the composition and equipment.

All of the separate Army heavy tank battalions were formed in a similar style and composition; the units were organized with an Abteilung Stab und Stabskompanie (Battalion Staff and Headquarters Company), three schwere-Panzer-Kompanien (or Heavy Tank Companies) as diagrammed on the opposite page, and a Versorgungs-Kompanie (or Supply Company) that included the necessary maintenance personnel in addition to the "trains" and supply elements of the battalion. The prime difference between the two different types of battalions was in the organization of the combat tank companies. In the next issue, we will deal with these differences as well as Waffen-SS heavy tank units.

SCHWERE-PANZER-KOMPANIE

PANZERKAMPFWAGEN VI. KÖNIGSTIGER, 1944-45

HEADQUARTERS SECTION



1 NCO Tank Commander
1 NCO Gunner
1 NCO Radioman
1 EM Loader
1 EM Driver



1 OFF Company Commander
1 NCO Gunner
1 NCO Radioman
1 EM Loader
1 EM Driver



1 NCO Supply Sgt.
1 NCO Armorer
1 EM Driver



1 EM Driver



1 EM Driver



1 NCO 1st Sgt.
1 EM Clerk
1 EM Driver

FIRST PLATOON



1 NCO Tank Commander
1 NCO Gunner
1 NCO Radioman
1 EM Loader
1 EM Driver



1 DFF Platoon Leader
1 NCO Gunner
1 NCO Radioman
1 EM Loader
1 EM Driver



1 NCO Tank Commander
1 NCO Gunner
1 NCO Radioman
1 EM Loader
1 EM Driver



1 NCO Tank Commander
1 NCO Gunner
1 NCO Radioman
1 EM Loader
1 EM Driver

SECOND PLATOON



1 NCO Tank Commander
1 NCO Gunner
1 NCO Radioman
1 EM Loader
1 EM Driver



1 DFF Platoon Leader
1 NCO Gunner
1 NCO Radioman
1 EM Loader
1 EM Driver



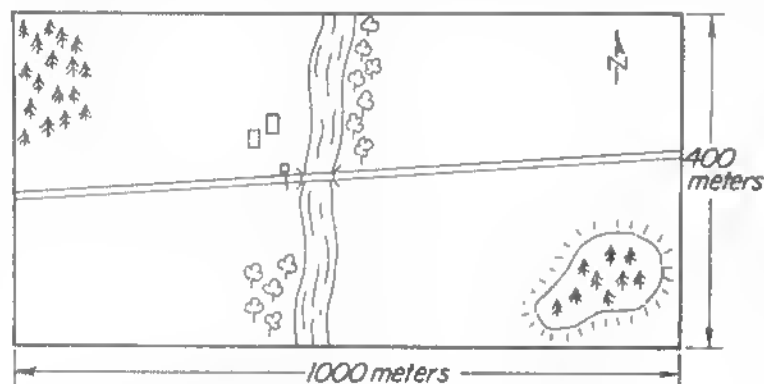
1 NCO Tank Commander
1 NCO Gunner
1 NCO Radioman
1 EM Loader
1 EM Driver



1 NCO Tank Commander
1 NCO Gunner
1 NCO Radioman
1 EM Loader
1 EM Driver

THIRD PLATOON— Identical to 1st. and 2nd. Platoons, except Platoon Leader is an NCO.

Here is a problem for you. You are commanding a platoon-size detachment of British Commandos and have been assigned the task of destroying a bridge in the Normandy area of the French coast. (See the map below) Your available forces are 36 Commandos with Sten guns, 12 men with Sten guns and satchel charges, 2 Bren gun teams, 2 men with PIAT's, 1 Lieutenant with the electrical detonator, 1 Lieutenant with side arm, and yourself with a Very pistol and a box of red



Key: unfordable deep river
 bridge, two span
 sentry post
 dirt road
 barracks
 light woods

signal flares. For transportation, you can count on three C-47 Dakota aircraft or three gliders (or any combination of three aircraft)

In launching your attack you have the following options: 1. you may land by either parachute or glider, and 2. you have the choice of whether to land during daylight or at night. Glider landings are simulated by your selection of a landing spot and the roll of a die. A roll of "1" or "2" means you have landed safely on or near the intended spot. Should a "3" or "4" come up, you have suffered a minor mishap and the fragile flying machine will be placed near some suitable obstacle and 5 casualties deducted from its contents. Those unfortunate ones who roll a "5" will be rewarded with a moderate disaster, their aircraft will crash "somewhere on the playing area" and half the passengers will be

out of the game. Anyone rolling a "6" will be arrested for littering the Norman landscape. Parachute drops are less risky in personnel but have other disadvantages. To drop a "stick" of paratroopers, you hand them to the referee who steps back a bit and tosses them lightly onto the playing area. Those landing on the floor, your opponents "drink", or the ashtray are considered hors d' combat and are out of play. Your second option determines who has the privilege of first move. A night attack gives it to you; a day drop gives it to the Germans. The satchel charges are used to destroy the bridge; this requires at least four charges. It takes two men to lay a charge, a second turn to connect the detonator, and BANG on the third turn. (There is a 10% chance that the detonator is faulty and fuses will be needed. Fuses require an extra turn to burn down, and you have 12 of them) The blast diameter of a charge is 4 inches on your board. Now, plan your attack. then see page 32 for the German situation, and how it might effect your well-laid plans.

The Baron's Corner: Working Kübelwagen doors (Continued from Page 27)

First, cut off the door handles from the doors, and drill a small hole through the doors where the handles went through. Now, take a thin piece of stretched sprue, and using heat, gently bend it into a squared-off "U" shape. The bottom of the "U" should measure about 3mm (on the inside). When trimmed, this will be the door handle. Next, from .020 sheet styrene, cut a small oval shaped piece of plastic, and drill a hole in the center. Round off one end of this oval piece and then cement it on the "U" shaped door handles, with the blunted-off end towards the rear, and the oval end forward (to form the latch). Now, using a sharp Xacto blade, carve a notch into the door jamb, adjacent to the position where the door handle goes through the door. This notch will be the holder for the door latch. The only remaining piece to be made is the triangular cover which fits on the inside of the door and which covers the mechanism (to keep dirt and prying fingers out). Cut this triangular piece from .020 sheet styrene and drill a hole for the door handle to pass through this plate (see sketch at bottom of page 27); and then make up two strips to space the triangular piece away from the door. Once this whole works is assembled (per the sketch), you will have a functioning door latch system. Really, it works. Of course, you do have to use care in opening the doors.

The only other thing that might be added to the door system is a small piece of brass tubing. Find a piece that will act as a sleeve for the insect pins; then cut a piece which will fit between the hinges on the doors, covering the insect pins. This will look very scale, and will also hide the small gap between the two doors. . . . Good luck.

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"Photo Epilog" - The V-100 "Commando" Armored Car



An interesting front view of the V-100 "Commando" Armored Car in troop use. The infantrymen are carrying M-14 rifles with blank adapters on the muzzles, indicating that this photo was taken during maneuvers. Photo is evidently circa 1966. Photo Credit: A. J. Clemmens.



The above photo shows the "recovery" version of the V-100 "Commando" Armored Car, in use with the U.S. Air Force in Vietnam. This version mounts a single free-swiveling 7,62mm M60 machine gun (with shield) on the modified open upper-superstructure. Of special interest is the lifting boom and cable arrangement, which utilizes the standard front-mounted winch. The two-piece side door, the bottom piece of which also acts as a step, is also clearly shown, along with the unusual protective screens over the headlights.

Photo Credit: LTC J. W. Loop

and LT Vz. 38 tanks were re-issued as equipment for two German armored divisions, and they were used in the campaign in France. General Guderian mentioned Czech tanks in action in France, where they performed excellently against the French and British tanks. Most of the remaining tanks ended up being destroyed in Russia, or being converted for other purposes, such as the Marder III. series of self-propelled guns (described last month).

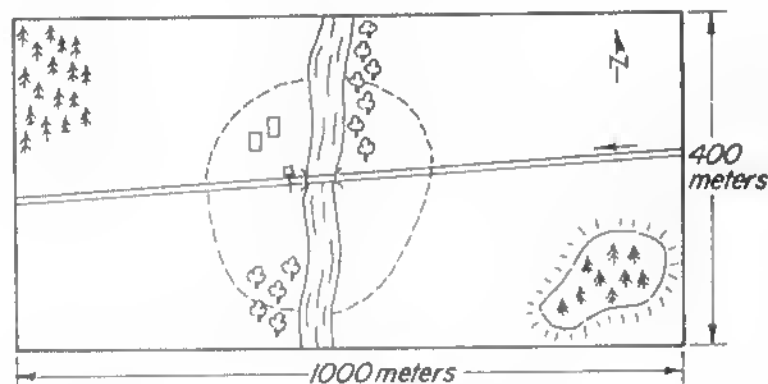
The tank facilities of Czechoslovakia became a welcome addition to the potential of the German armaments industry. CKD was ordered to carry-out the production of LT Vz. 38 tanks, as originally scheduled for the Czechoslovak army. The foreign contracts were to be completed, and after the occupation, Czech tanks continued to be exported to Rumania and Lithuania. For the next two years, CKD proceeded to manufacture the unmodified LT Vz. 38, which the Germans now called the Pz. 38(t). The "(t)" stood for "Tschechisch" to identify the country of origin. The production of the V-8-H medium tank continued only to cover the Slovak orders, and thereafter, was halted. By 1942, the Panzer 38(t) was being modified in the variety of configurations that are so well known to expert armor enthusiasts. The final version was the tank destroyer ("Hetzer") which mounted a 75mm cannon. During the German occupation, production of tanks and other armored vehicles in Czechoslovakia reached the fantastic total of 300 vehicles per month. Skoda was ordered to take over some of the production from the overloaded CKD plant. All throughout the war, not one bomb fell, either on Skoda or CKD. At the end of the war, several hundred of the tank destroyers were found in the two factories, just completed but not delivered, since the destruction of the railroads made the final delivery to the German army impossible. Thus, in 1945, the new Czechoslovak armed forces received back many more armored vehicles than they surrendered in 1939. The first armored units of the re-born Czechoslovak Army were equipped with the 75mm cannon equipped tank destroyer.

(To be Concluded Next Month)

Wargame **Battle Problem** (Continued)

by Dale Bley and Bill Platz

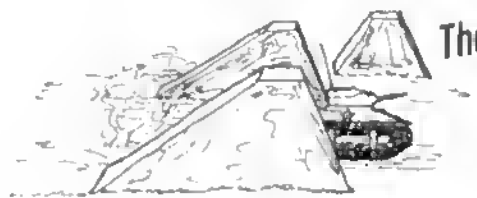
Well, here you are on garrison duty in occupied France. Across the channel is an invasion fleet, in the woods are bands of French partisans, the sky is full of enemy planes and all you have are two squads of over-age infantry, and a broken down armored car. and a bridge to guard.



Key:
 unfordable deep river
 bridge, two span
 sentry post
 defensive perimeter
 dirt road
 barracks
 light woods
 German reinforcements

At least the barrack's roof doesn't leak. The orders are to position two man sentry posts in the out-laying area at your discretion, but under no circumstances are more than 6 men to be absent from your main perimeter at any given time. Your positions may be established within 250 meters radius of the bridge. You have been allotted enough anti-personnel mines for a belt 50 meters long and 10 meters deep. Your total force consists of 7 NCO's with machine pistols, 12 riflemen, 3 MG-42 machine gun teams, 1 extra LMG (it will cost you two men to use it), your radio operator with his machine pistol, and Leutnant Gelb, whose courage is a matter of some question. You have also managed to commandeer 2 light trucks, 2 Kübelwagen staff cars, a Schwimmwagen, and of course, the Sd. Kfz. 234/1 armored car with crew. Located several movement turns to the east of your position is a Waffen-SS infantry detachment of

four NCO's, 2 MG-42 machine gun teams and 12 riflemen. They will come to your assistance, if asked politely, and they have 2 light trucks for transport. Remember, if anything happens to that bridge, it's the Eastern Front for sure.



The Charge of the Light Brigade

by Lonnie Gill

"Stormed at with Shot and Shell,
Boldly they rode and well,
Into the jaws of Death,
Into the mouth of Hell,"

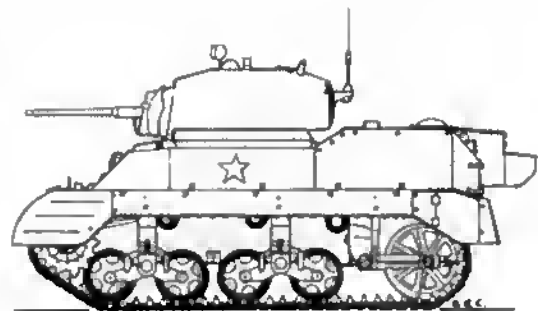
(from "The Charge of the Light Brigade" by
Tennyson)

Lt. Col. Hillyard slowly turned the knob on his binoculars, bringing the somber blurs of gray and brown into sullen clarity. The pillboxes of the Siegfried Line dominated the scene just as their designers had intended. Built on hills controlling the muddy, rolling terrain below, each pillbox was divided into several rooms and protected by six to eight feet of concrete. Although their apertures were too small to mount many of the weapons developed during five years of war, each had one or two small anti-tank guns as well as automatic weapons. The pillboxes were relatively close together to protect each other's "blind spots" and they also served as shelters for many of the crews that manned the heavy weapons that were dug-in between them.

But the pillboxes were only part of the German defensive positions, as Col. Hillyard well knew. His binoculars scanned the double row of "dragon's teeth" and steel anti-tank obstacles which were strung with barbed-wire. Further back, there were Panthers and Tigers, as well as mobile artillery batteries to provide additional support. Though many of the defenses were obsolete by 1944, it was still a "tough nut to crack".

He slowly lowered his "glasses" and scowled at the sky. Even the weather was German. The thick oppressive gray clouds hung low over the battlefield ensuring there would be no air support again today, and there would be mud - Mud thick enough to bring a Sherman tank slowly to a stop, caught in its glutinous grasp. Ever since October 4th, two days before, the battalion had been trying to break through. It had been costly. Sherman after Sherman had been hit as they struggled through the mud in a wealter of fire from both sides. Each day, the battalion had been driven back to their hull-down starting positions. Now, two-thirds of the battalion's two companies of Shermans were out-of-action, or mired in the over-powering mud. Only the light tanks of "C" Company were left. Col. Hillyard slowly reached for his field telephone.

At 1100 hours, artillery crashed, and the Germans dove for cover. Suddenly, the M-5's of "C" Company charged full speed at the enemy pillboxes. It was like a scene from the past as the light tanks sped across the muddy fields that had stopped the Shermans, dodging 88mm shell bursts. As the drivers doggedly kept-up the rapid pace, the crews desperately hung on to what ever support they could find, while gunners sprayed machine gun bullets in all directions. With mud geysering around them, the light tanks raced around the obstacles and through the fortifications as the startled Germans were coming out of their shelters to man the anti-tank guns.



M-5A1 Light Tank of
"C" Company, 67th Armored Regt.

"C" Company roared east up the high ground and through the last of the Siegfried line. Their M-5's overran many dug-in anti-tank guns, and destroyed three assault guns. After dueling with a heavy artillery battery, they reached the main road and encountered five enemy Panzer VI tanks. The "Tigers" slowed as the U.S. light tanks bore down on them from all sides. The Americans pinged round after round of 37mm shot off the heavy armor of the German "panzers" and quickly outflanked them. The Germans put their tanks in reverse and hastily withdrew in confusion from the U.S. tanks snapping at their heels. The Siegfried Line was broken open at last.

Meanwhile, the battalion's remaining Shermans mopped-up the fortifications, flushing the remaining dazed Grenadiers from their hiding spots. By the time they were finished, over 200 Germans had surrendered to the battalion. The Shermans, Tank Destroyers and infantry reached the exhausted and bruised "C" Company in time to beat off a fierce counterattack by the enraged Germans. Consolidated attacks were launched the next day to enlarge the American penetration.

The four-day attack had cost the U.S. Tank Battalion twenty-one Shermans and three M-5s (though many were soon recovered) and more importantly, fifty-seven casualties. A heavy price, but thanks to "C" Company and its attack, which would have made its cavalry predecessors proud, Lt. Col. Hillyard was able to report once again "Mission Accomplished".

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Product Review: Sd. Kfz. 250 Scratch Builder's Guide by Jim Steuard

Anyone for a model of the Sd. Kfz. 250 light armored halftrack? The answer is probably a resounding "yes", judging by the letters that we receive. Well, this product may go a long way towards solving the lack of a model for this "rare" vehicle. Until recently, there had been no kit made of this armored halftrack; and the Scratch-Builders Guide attempts to guide the less-than-advanced modeler through the complicated creation of a 1:35th scale Sd. Kfz. 250/10, the version of the armored halftrack that was armed with a 3.7cm anti-tank gun. If you're not really interested in that specific version, you'll still be interested in the basic vehicle construction, from which you can then construct almost any variant you desire.

The Sd. Kfz. 250/10 Scratch-Builders Guide consists of five sheets of 8-1/2" x 11" paper, printed so as to best fit into a three-ring notebook or folio. The pages give you a set of four-view drawings of the vehicle in 1:35th scale; a set of hull templates, so you can cut-out sheet styrene to assemble the many-faceted hull; a set of conversion drawings for the 3.7cm gun, to be modified from Monogram's 37mm anti-tank gun (in the Jeep Kit); and an exploded assembly view, showing the modeler what parts of the Nitto Sd. Kfz. 251/1 kit to use (for the hull underbody) and how to fit all those plastic pieces together. In addition, there is a page of notes and references to assist you in starting work.

All-in-all, this is a most interesting packet of plans. To really call it a "guide" would be a misnomer, for there is much that could be said about making a model of the Sd. Kfz. 250 that is not presented. I would have liked to see a more detailed set of four-views, so that I could try to super-detail my creation, but there are plenty of photos available. . . . and the "guide" lists numerous references to look at. I would also have liked to see additional plans for the late model of this vehicle; the "guide" only presents the early (1939-1943) version. Even with these shortcomings, the Scratch-Builders Guide is a good buy for the serious modeler who is interested in building a model that is not readily available in any other form. The "Guide" costs \$1.00 and it is available from Miniature Aircraft, P. O. Box 26263, Indianapolis, Ind. 46226.

Product Review Armtec Accessories by Lonnie Gill

Did that last converted Airfix miniature vehicle seem to lack something when you finished it? One of the basic reasons that models or conversions fail to look like the actual vehicle is that they fail to duplicate all of the clutter of tools and equipment that was fastened and even draped over the real vehicle. Armtec has very nicely come to the rescue of the 1:76th scale modeler, with a number of sets of AFV accessories. These sets are coordinated for use on similar vehicles, and are finely molded in a plastic that is similar to that used in Mini-tanks. The detail of even the smallest tool is most impressive. The following sets are available.

1. Gasoline Cans; a set of ten cans which are suitable for both German and Allied vehicles; this saves the trouble of finding them from various Mini-tanks. You can now use as many of them as you wish.
2. German Machine-guns; set contains one MG-34, one MG-42, two AA mounts, two bipods, four ammo drums, and a two-piece MG shield.
3. German Pioneer Tools; set contains pick, shovel, axe and other tools as well as two "jerry" cans.
4. American AFV Tools; the set contains shovel, axe, hammer, wrench, crowbar, two "jerry" cans and a pick ----- with a separate handle even.
5. German Spare Track; the set contains twelve track shoes suitable for use on the Panther or the Tiger tank model.
6. German OVM; the set contains four towing ropes, two "S" hooks, kacks, a crank, and a small box.
7. Tow Chain; a tin black-colored chain, over 25cm long; this would also be suitable for use on ship models.

The problem with many 1:76th scale kits is that they are sparse on detail, when compared with the original or larger models. With a few of the above sets, however, you can load your model with plenty of details, and, at 60¢ a set, you can't go wrong. They are available from Armtec, 5 Belinda Lane, Enfield, Connecticut 06082.



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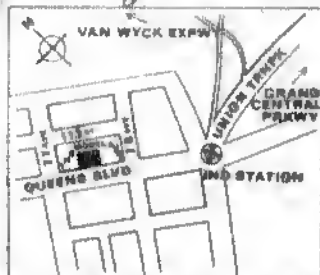
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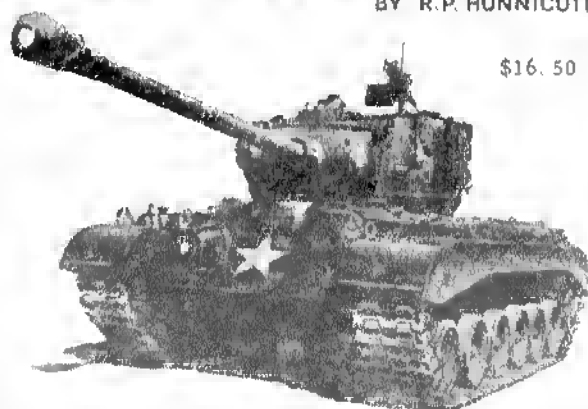
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